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**CONSOLIDATED CONSENT AGREEMENT/
FEDERAL FACILITY COMPLIANCE
AGREEMENT/FEDERAL FACILITY AGREEMENT
MONTHLY PROGRESS REPORT PERIOD ENDING
JULY 31, 1992**

08/20/92

**DOE-FN/EPA
125
REPORT**

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
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Introduction

The Consent Agreement (CA) As Amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 120 and 106(a), the Federal Facility Compliance Agreement (FFCA), and the Federal Facility Agreement (FFA) between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (U.S. EPA) signed September 20, 1991, July 18, 1986, and November 19, 1991, respectively, require that monthly reports be submitted to the U.S. EPA regarding progress made to meet the provisions of those agreements. This report fulfills those requirements by describing actions undertaken at the Fernald Environmental Management Project (FEMP) during the period July 1 through July 31, 1992 and planned actions for the period August 1 through August 31, 1992.

Highlights of activities in July include the following:

- The South Plume Recovery System Design Monitoring Evaluation Program Plan (DMEPP), Revision 0, for Removal Action No. 3, South Groundwater Contamination Plume, was transmitted to the U.S. EPA and Ohio EPA on July 20, 1992.
- On July 9, 1992, a Best Management Practice (BMP) action within Removal Action No. 3 was completed by removing contaminated concrete and soil near the FEMP wastewater discharge to the Great Miami River.
- Installation of Removal Action No. 3's IAWWT(SWRB) and IAWWT(BDN-ETS) systems is complete and operations are initiated.
- The installation of four air monitors to augment the site requirements for estimating the off-site releases of potentially harmful contaminants was completed in July (Removal Action No. 6, Waste Pit 6 Residues).
- The transfer of UF₄ to the Department of the Army, Materials Disposition Order D-77, has been completed. Total shipped against this order was 346.6 metric tons uranium, or 1,008,053 net pounds, 764,123 uranium pounds. The final shipment was made on July 21, 1992 (Removal Action No. 12, Safe Shutdown).
- The revised Work Plan for Removal Action No. 13, Plant 1 Ore Silos, was submitted to the U.S. EPA and the Ohio EPA on July 15, 1992.
- The revised Work Plan for Removal Action No. 14, Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator, was submitted to the U.S. EPA and the Ohio EPA on July 15, 1992, was approved by the Ohio EPA on July 29, 1992.

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Introduction (continued)

- The revised Work Plan for Removal Action No. 16, Collect Uncontrolled Production Area Runoff - Northeast, was conditionally approved by the U.S. EPA on July 8, 1992.
- The revised Work Plan for Removal Action No. 18, Control Exposed Material in Pit 5, was issued for approval in July.
- The Removal Action No. 24, Pilot Plant Sump, was submitted to the U.S. And Ohio EPAs on July 24, 1992.

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WORK ASSIGNMENTS AND PROGRESS

Descriptions of work progress are presented in the following sections and/or enclosures to this report:

- o CA Section IX - Removal Actions.
- o CA Section X - Remedial Investigation/Feasibility Study.
- o Enclosure A - Wastewater Flows and Radionuclide Concentrations under CA Section XXIII.B.
- o Enclosure B - FFCA: Initial Remedial Measures and Other Open Actions.
- o Enclosure C - FFA: Control and Abatement of Radon-222 Emissions.

CA Section IX. Removal Actions

This section provides an update of activities associated with the implementation of Removal Actions (RAs) at the FEMP during July 1992. Information is presented for each of the Removal Actions identified in the Consent Agreement As Amended.

Phase I Removal Actions

- o RA No. 1, Contaminated Water Under FEMP Buildings.
- o RA No. 2, Waste Pit Area Run-off Control.
- o RA No. 3, South Groundwater Contamination Plume.
- o RA No. 4, Silos 1 and 2.
- o RA No. 5, Decant Sump Tank.
- o RA No. 6, Waste Pit 6 Residues.
- o RA No. 7, Plant 1 Pad Continuing Release.

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CA Section IX. Removal Actions (continued)

Phase II Removal Actions

- o RA No. 8, Inactive Flyash Pile Control.
- o RA No. 9, Removal of Waste Inventories.
- o RA No. 10, Active Flyash Pile Controls.
- o RA No. 11, Pit 5 Experimental Treatment Facility.
- o RA No. 12, Safe Shutdown.
- o RA No. 13, Plant 1 Ore Silos.
- o RA No. 14, Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator.
- o RA No. 15, Scrap Metal Piles.
- o RA No. 16, Collect Uncontrolled Production Area Runoff--Northeast.
- o RA No. 17, Improved Storage of Soil and Debris.
- o RA No. 18, Control Exposed Material in Pit 5.

Phase III Removal Actions

- o RA No. 19, Plant 7 Dismantling.
- o RA No. 20, Stabilization of UNH Inventories.
- o RA No. 21, Expedited Silo 3.
- o RA No. 22, Waste Pit Area Containment Improvement.
- o RA No. 23, Inactive Flyash Pile.
- o RA No. 24, Pilot Plant Sump.

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CA Section IX. Removal Actions (continued)

- o RA No. 25, Nitric Acid Tank Car and Area.
- o RA No. 26, Asbestos Removals (Asbestos Program).
- o RA No. 27, Management of Contaminated Structures at the FEMP.

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RA No. 1, Contaminated Water Under FEMP Buildings

Plant 6 - Pumping and collection of the perched water from underneath Plant 6 began on May 31, 1991. Through July 1992, approximately 22,221 gallons of perched groundwater have been extracted and transported for treatment to the Plant 8 VOC treatment system.

Plants 2/3 and Plant 8 - The Plants 2/3 and Plant 8 extraction systems became operational on October 23, 1991. Through July 1992, approximately 96,356 gallons of perched water have been collected for treatment from Plant 2/3 and approximately 68,169 gallons of perched water have been collected for treatment from Plant 8. Direct piping to the Plant 8 treatment system from the Plant 2/3 wells was completed in May 1992.

Plant 9 - Pumping from Plant 9 began on August 20, 1991. Approximately 20,068 gallons of Plant 9 perched water have been extracted and transported to Plant 8 through July 1992.

Plant 8 - The startup date for the Plant 8 treatment system was July 24, 1991. Through July 1992, approximately 201,406 gallons of groundwater have been transported and treated utilizing the Plant 8 treatment system.

All activities to support the deliverables identified in the three U.S. EPA approved Removal Action Work Plans have been completed. Pumping of perched water beneath the four plants with subsequent treatment in the Interim Plant 8 VOC Treatment System followed by uranium removal in the Plant 9 Wastewater Treatment System will continue in accordance with the Work Plan provisions. Treatment will continue in this manner until the Advanced Waste Water Treatment (AWWT) Phases I and II are operational in 1994. This removal action has been transferred to Operable Unit 5.

RA No. 2, Waste Pit Area Runoff Control

The Work Plan for the Waste Pit Area Runoff Control Removal Action was approved with modifications by the U.S. EPA on January 10, 1991. Conditional approval was received from the Ohio EPA on April 2, 1991.

Construction activities have been ongoing since June 6, 1991. All construction sequences for the Waste Pit Area Runoff Control Removal Action are completed.

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RA No. 2, Waste Plt Area Runoff Control (continued)

Activities in July included the completion of punch list items, completion of site maintenance procedures, and completion of the project's administrative requirements. The Operational Readiness Review was signed and the DOE was notified that these activities had been completed as of July 30, 1992. The system has been capable of receiving and transferring collected stormwater since June 15, 1992.

KEY MILESTONES	STATUS	DUE DATE
Completion of construction	Completed June 15, 1992	July 31, 1992

RA No. 3, South Groundwater Contamination Plume

Part 1

The Work Plan for Part 1, Alternate Water Supply for two industrial users (Albright & Wilson and Delta Steel) was approved by the U.S. EPA on January 3, 1991. Subsequently, Delta Steel was deleted from the current scope of the project with approval of the U.S. EPA and Ohio EPA. A revised Work Plan (Revision 1) was prepared and issued to the EPAs to reflect this and other changes which have occurred. A summary of the most recent and ongoing activities for Part 1 are listed below:

- Revised Part 1 Work Plan is in preparation to incorporate comments received from the U.S. EPA.
- DOE-HQ approved the condemnation packages for the remaining properties on July 21, 1992, and the packages have been forwarded to the Corps of Engineers for submittal to the U.S. Attorney.

Part 2

To expedite the Part 2 construction, this project was divided into four construction bid packages. These include: 2A - Groundwater discharge pipeline (pressure flow) and outfall pipeline (gravity flow) from south of Willey Road to and including Manhole 183B, 2B - Manhole 183B to Great Miami River (2B1) and aeration facility (2B2), 2C - Recovery well field, and 2D - Test well installation and pump test. Part 2 follow-on activities include:

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RA No. 3, South Groundwater Contamination Plume (continued)

- The South Plume Recovery System Design Monitoring Evaluation Program Plan (DMEPP), Revision 0, was transmitted to the U.S. EPA and Ohio EPA on July 20, 1992. Portions of this document were previously submitted to the EPAs under the title "South Plume Groundwater Extraction System Operation and Maintenance Manual."
- Comments from the U.S. EPA related to waste characterization and disposition on the Part 2/3 Work Plan are being addressed.
- On July 29, 1992, a signed right-of-entry for construction was received from CSX Realty for installation of recovery wells for Package 2C - Well field.
- Easement agreement has been obtained from the utility company permitting construction on the outfall pipeline east of the FEMP and west of State Route 128.
- On July 22, 1992, an overview was presented of the remaining Removal Action No. 3, Part 2 and Part 5 actions, schedule, and logic for completing these projects by January 29, 1993. Emphasis was placed on the revisions being made on the Part 5 Work Plan and the contents of the DMEPP. In attendance were key personnel from the U.S. EPA, Ohio EPA, DOE, WEMCO, Parsons, and ASI/IT. The presentation was intended to help ensure that all personnel understood the direction in which the projects are heading and the projects' current status..
- On July 9, 1992, a Best Management Practice (BMP) action was completed by removing contaminated concrete and soil near the FEMP wastewater discharge to the Great Miami River. Radiological technicians identified the areas above the free release criteria and this contaminated material was removed, containerized, and transported to the FEMP Plant 1 Pad. A radiological survey was performed following the removal of the material to assure the residual levels were below the free release criteria of 5,000 dpm. Soil samples were collected from the affected area and sent to the WEMCO Laboratory for analysis.
- On July 28, 1992, the construction near the end of the new outfall pipeline at Manhole 183B near the river bank (Part 2A) was suspended due to the presence of radiologically contaminated concrete rubble. The contaminated rubble was discovered by a Radiation Safety Technician (RST) who was providing coverage at the job site according to provisions stipulated in Attachment 1 of the Part 2/3 Work Plan. It is believed that the source of this contamination is the same as the one described in the Removal Site

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RA No. 3, South Groundwater Contamination Plume (continued)

Evaluation for contaminated riprap at the Great Miami River Outfall. This was recently addressed as a Best Management Practice action. Accordingly, a plan is being developed following, in general, the procedures implemented in the Best Management Plan action for contaminated riprap. Manhole 183B, the easterly extent of the Part 2A construction package, was subsequently relocated approximately 20 feet upstream to avoid excavation of this area and to allow Part 2A construction to continue.

- On July 7, 1992, near the Storm Sewer Outfall Ditch area, a small area was discovered which included radiologically contaminated non-friable asbestos transite material and concrete rubble. This site has been roped off as a controlled area, and a Removal Site Evaluation (RSE) is in progress to determine the appropriate response activity. The site is in a location where work can proceed with minor inconveniences.
- Requests for Action (RCA) were issued (the week ending July 29) to the construction manager for the following construction packages/purchases: (1) Package 2C - Well Field; (2) Package 2D - Test Well; and (3) Recovery Wells - RUST Engineering Pre-purchase.

Part 3

The Work Plan for Part 3 (the installation and operation of an IAWWT System to reduce uranium contaminant loading discharged to the Great Miami River to a level less than 1,700 pounds per year) was prepared as one work plan with Part 2. Due to the relocation of the Part 2 well field to an area having a higher concentration of uranium, the IAWWT system capacity was expanded in order to maintain the 1,700 pound per year maximum level. The IAWWT system includes two treatment units. The IAWWT unit located at the Storm Water Retention Basin (IAWWT[SWRB]) will consist of two trailer-mounted assemblies, each with a nominal 150 gpm capacity or a total nominal 300 gpm capacity and the unit located at the Bionitrification Treatment/Effluent Treatment System (IAWWT[BDN-ETS]) will have a nominal capacity of 100 gpm.

Current activities in this area are as follows:

- Installation of the two systems, the IAWWT(SWRB) and the IAWWT(BDN-ETS) is complete and operations were initiated.
- Presentation of training for the initial complement of IAWWT operators was completed the week of July 29, 1992.

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RA No. 3, South Groundwater Contamination Plume (continued)

- Operational Readiness Review (ORR) was approved July 30, 1992, and startup of both units began on July 30, 1992. The operation milestone date of July 30, 1992, was met. Filter plugging problems are being experienced and are being addressed.

Part 4

Part 4 of the South Groundwater Contamination Plume Removal Action Work Plan involves groundwater monitoring and institutional controls.

A letter was issued to DOE-FN by WEMCO, on July 14, 1992, describing groundwater monitoring and institutional controls which have been implemented to date to address this commitment. This document describes the following FEMP actions: sampling of selected RI/FS wells, sampling of private wells, and fulfilling ongoing sampling and reporting requirements for the State Route 128 study area.

Part 5

Part 5 was added to the South Plume in order to address the relocation of the Part 2 well field. Part 5 includes groundwater modeling and geochemical investigation of the area south of the well field to determine if 20 ppb uranium concentration in groundwater is present downgradient of the Part 2 well field.

- A response to U.S. EPA and Ohio EPA comments on the Part 5 Work Plan has been prepared.
- A Revised Part 5 Work Plan was prepared which reflects the following changes:
 - addresses deletion of monitoring wells proposed for installation on Delta Steel property and provides an alternative arrangement for obtaining this information;
 - adds a traverse line of hydropunching between the original lines of hydropunching and the well field to provide information in the event that the 20 ppb isopleth is north of the two lines of hydropunching;
 - adds continuous core sampling for the purpose of determining the homogeneity of the aquifer;

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RA No. 3, South Groundwater Contamination Plume (continued)

- provides for gamma ray logging to be run in completed boreholes for the purpose of making stratigraphic correlations and calculating permeabilities of the aquifer;
 - provides additional information for evaluating the vertical depth of the proposed extraction wells for Part 2 of the South Plume Removal Action;
 - divides the project into four phases and provides a schedule for performing the phases; and
 - explains that, although there is a revised Soil Vapor Procedure, DOE will not proceed with the soil vapor (Phase 4) at this time.
- Hydropunching of the two traverse lines in the alluvial area is in progress.

Work in August for RA No. 3, Parts 1 - 5 will focus on the following: ensure that the Part 1 condemnation packages are forwarded to the Department of Justice; continue Part 2A construction; review and approve Part 2B1 coffercell design so field work can proceed; issue Part 2B2 package for bids; receive/evaluate bids on Parts 2C and 2D packages and issue for construction; address contaminated riprap at the Great Miami River; continue Part 3 operations; continue Part 4 sampling; and issue the Part 5 package for installation of well field monitoring well installation and associated hydropunching, and complete two rows of hydropunching in the alluvial area.

RA No. 4, Silos 1 and 2

Installation of the bentonite in Silos 1 and 2 was completed on November 28, 1991. This was ahead of the scheduled commitment date of December 1, 1991.

Silos 1 and 2 were sampled in July for headspace radon concentrations using a grab sample method, as was performed in 1987, and a continuous radon monitor. The results of these efforts are as follows:

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RA No. 4, Silos 1 and 2 (continued)

	<u>DATE</u>	<u>GRAB SAMPLE</u>	<u>CONT. PYLON MONITOR (Time)</u>
Silo 1	7/16/92	128,734 pCi/l (9:30 a.m.)	
	7/22/92	127,834 pCi/l (9:40 a.m.)	109,000 pCi/l (9:56 a.m.)
Silo 2	7/23/92	228,303 pCi/l (7:32 p.m.)	154,200 pCi/l (7:25 p.m.)
	7/23/92	180,839 pCi/l (8:22 p.m.)	182,715 pCi/l (8:40 p.m.)

The above results indicate a reduction of radon concentration in the headspace of over 99%.

As previously discussed at the Program Managers' Meeting on July 21, 1992, the Department of Energy (DOE) is preparing a paper detailing a revised method for evaluating the effectiveness of the bentonite in the silos. The reduction in radon emanation, as a result of bentonite installation, can be evaluated more thoroughly and consistently using accurate methods to measure the radon concentration in the silo headspace and by analyzing the relationship of radon concentration in the silos to observed radon concentration in the vicinity of the silos and at the site boundary. This package is expected to be completed in September 1992, to provide adequate time for the incorporation and evaluation of hourly headspace data for both the month of July and August 1992, as well as the analysis of observed radon data from outside of the silos.

Calibration and checkout of the Removal Action No. 4, Silos 1 and 2, data logging system continued in July. The data logging system, when fully operational, will automatically record data headspace radon monitoring, headspace humidity monitoring, and temperature and pressure monitoring of Silos 1 and 2. Also data from four radon gas monitors in the K-65 area exclusion will be recorded.

Work in August will include operational turnover of the data logging system to Environmental Monitoring.

As defined in the Removal Action Work Plan and the Federal Facility Agreement, data associated with monitoring the effectiveness of the bentonite installation is included in Enclosure C.

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RA No. 4, Silos 1 and 2 (continued)

KEY MILESTONES	STATUS	DUE DATE
Complete installation of bentonite slurry into Silos 1 and 2	Completed November 28, 1991	December 1, 1991
Submit Bentonite Monitoring Plan	Completed January 27, 1992	January 27, 1992
Report monitoring results for bentonite effectiveness to EPA - 1st run 4/92	Completed May 22, 1992	May 22, 1992

RA No. 5, K-65 Decant Sump Tank

Removal of the liquid from the K-65 decant sump tank was completed on April 16, 1991 when the liquid was transferred to the holding tanks in Plant 2/3.

The analytical results for the general water quality parameters, Hazardous Substances List (HSL) volatile organics, HSL semi-volatile organics, and HSL pesticide organics and inorganics were received for the decant liquid taken during the implementation of the Removal Action. A Materials Evaluation Form (MEF), with the available analysis, was completed to determine the required treatment of the decant liquid. The liquid pumped from the K-65 decant sump tank was treated by the FEMP Wastewater Treatment Facility. Treatment of the decant liquid based on the MEF and available analytical results was completed on May 12, 1992.

Work in July 1992 included preparing the Removal Action final report. The report will be finalized and transmitted to the EPAs in August.

KEY MILESTONES	STATUS	DUE DATE
Complete the removal of the liquid from the K-65 decant sump tank	Completed April 16, 1991	April 26, 1991

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RA No. 6, Waste Pit 6 Residues

This removal action was completed on December 19, 1990. The only remaining issue related to the Waste Pit 6 Exposed Material Removal Action involved the placement of air monitors to augment the site requirements for estimating the off-site releases of potentially harmful contaminants. The installation of the four air monitors was completed in July.

RA No. 7, Plant 1 Pad Continuing Release

This removal action consists of three phases. Phase I, which implements the run-on/off control measures, is complete. Phase II addresses the installation of 80,000 square feet of a newly covered and controlled concrete storage pad. Phase III involves activities to upgrade the remaining 375,000 square feet of the existing Plant 1 storage pad. Phase III upgrading activities include installation of a polymeric/vapor barrier over the existing concrete and the installation of concrete above the barrier with an epoxy sealant. In addition, 22,000 square feet of the Phase III work area will be enclosed beneath a tension structure.

Activities in July included the delivery of one tensor support structure. Additionally, the construction contractor completed installation of the Phase II pad. The grouting of three wells was also completed in July.

The delivery of additional tensor support structures and the erection of these structures will begin in August. Additionally, concrete work, such as curbing and ramping, will be completed.

KEY MILESTONES	STATUS	DUE DATE
Complete Phase I	Completed January 17, 1992	March 13, 1992
Complete Phase II	Open, on schedule	December 21, 1992
Complete Phase III	Open, on schedule	February 21, 1995

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RA No. 8, Inactive Flyash Pile Control

The Inactive Flyash Pile Isolation Activity, which involved the installation of a plastic chain link barrier and the posting of warning signs, was completed ahead of schedule on December 23, 1991.

RA No. 9, Removal of Waste Inventories

During July 1992, 8,870 drum equivalents (DE) of low-level waste (LLW) were dispositioned. The July goal for shipments was 9,356 DEs. This resulted in a FEMP LLW shipping deficit of 1,384 DEs. The FY1992 cumulative total LLW shipped is 83,574 DEs.

KEY MILESTONES	STATUS	DUE DATE
The NTS Waste Shipping Application to ship waste to the NTS was transmitted to DOE-NV	Completed on July 20, 1992	July 21, 1992
Update existing internal procedures to ensure that appropriate shipping documentation is entered into the administrative record file	On schedule (To be updated annually)	June 30, 1993

The FEMP continued shipping low-level thorium waste during July. Eight thorium shipments (318 drums) were made without incident.

The Nevada Test Site (NTS) Waste Application to ship waste has been completed and submitted to DOE-NV on July 20, 1992.

Activities for August include continuing low-level thorium waste shipments, shipping 9,037 DEs of LLW, and eliminating the waste shipping deficit.

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RA No. 10, Active Flyash Pile Controls

The Work Plan for the Active Flyash Pile Controls Removal Action was completed and submitted ahead of schedule to the U.S. and Ohio EPAs on February 18, 1992. Comments from the Ohio EPA were received on March 18. U.S. EPA approval of the Plan was received on March 30. Resolution of these comments and a revised version of the Work Plan were transmitted to the EPAs on April 29.

The design of this removal action was completed in April. A construction contractor was selected on May 29, 1992. Interim controls (Phase I), to provide wind and surface water run-off control at the Active Flyash Pile, and the remainder of the removal action (Phase II), were completed on June 29, 1992. Any required maintenance will be conducted on an ongoing basis.

The potential use of active and inactive ash pile material as an additive in controlled low strength material (CLSM) is being investigated. Use of CLSM has become popular as a replacement for compacted granular material in backfill, structural fill, and slope stability applications.

KEY MILESTONES	STATUS	DUE DATE
Submit Active Flyash Pile Work Plan to the U.S. EPA for approval	Completed February 18, 1992	March 2, 1992
Phase I - Complete interim surface stabilization	Completed June 29, 1992	June 30, 1992
Phase II - Complete Active Fly Ash Pile Controls.	Completed June 29, 1992	October 28, 1993

RA No. 11, Plt 5 Experimental Treatment Facility

RA No. 11 was completed. The removal of the contents, structure, and filter material for the Experimental Treatment Facility (ETF) was completed 22 days ahead of schedule. Demobilization of the ETF Project has been completed. It was backfilled and capped, using a clay cover.

Activities for July included the completion of preliminary analytical results from the soils surrounding the ETF and the issuance of a draft Removal Action Final Report for internal review.

Planned activities for August include the issuance of the Removal Action Final Report on August 31, 1992.

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RA No. 11, Pit 5 Experimental Treatment Facility (continued)

KEY MILESTONES	STATUS	DUE DATE
Complete removal action within 120 days of Work Plan approval	Completed March 20, 1992	April 11, 1992

RA No. 12, Safe Shutdown

The Safe Shutdown Removal Action documents the ongoing shutdown activities that will remove uranium and other process/raw materials from equipment and pipe lines in areas of formerly used processing equipment and will properly disposition the removed materials off site.

KEY MILESTONES	STATUS	DUE DATE
Update existing internal procedures to ensure that appropriate documentation is entered into the administrative record file	On schedule (To be updated annually)	June 30, 1993

The preliminary assessments for each major process area are continuing. Plants 1, 2/3, 4, 8, and 9 have been completed. Plants 5, 6, and the Pilot Plant are in rough draft form.

Relocation of Building 51 capital equipment and expense items, which began in March, is continuing. This equipment is being relocated to allow for the Advanced Waste Water Treatment (AWWT) project to proceed. The task to isolate and remove the equipment is approximately 85 percent completed.

The effort to prepare the task specific Health and Safety Plan for Safe Shutdown is ongoing. The first draft was issued for internal review, and comments are being resolved.

Preparation of the Safety Analysis Report (SAR) is at 60 percent draft review.

Documentation in support of the Risk Assessment Report for the Safe Shutdown Program has been assembled for task team evaluation.

Planned activities for August include the distribution of Risk Assessment documentation to the task team; programmatic planning and staffing to support FY1993 residue/material removal.

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RA No. 13, Plant 1 Ore Silos

The Plant 1 Ore Silos Removal Action will include the dismantling of the 14 Plant 1 Ore Silos and their support structure. This dismantling will eliminate the potential threat of additional material releases and the safety hazard due to structural deterioration of the silos and their support structure. The activities in this removal action will include characterization, removal, containerization, and disposal of the materials making up the above-ground portion of the facility.

The revised Removal Action Work Plan was submitted to the U.S. EPA on March 27, 1992. Conditional approval of the Work Plan was received from the Ohio EPA on April 13, 1992 and U.S. EPA on May 20, 1992. Responses were provided to the EPAs on June 23. The revised Work Plan was submitted to the EPA on July 15.

A pre-bid meeting was held July 23; vendor proposals are due August 7. The contract is forecast to be awarded in late August.

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U. S. EPA	Completed January 9, 1992	January 10, 1992
Submit Revised Work Plan to the U.S. EPA	Completed March 27, 1992	March 30, 1992
Complete design.	Completed May 6, 1992.	June 18, 1992
Initiate field activities.	Open, on schedule.	October 18, 1992
Complete Removal Action	Open, on schedule.	December 20, 1994

RA No. 14, Contaminated Soils Adjacent to Sewage Treatment Plant Inclinerator

This removal action will include the isolation or removal and disposition of contaminated soils in the vicinity of the Sewage Treatment Plant (STP). This will eliminate the potential threat of additional material releases to the environmental media through migration. The activities in this removal action will include characterization, removal, containerization, and storage/disposal of the materials.

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RA No. 14, Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator (continued)

The revised Work Plan was resubmitted to the U.S. EPA on March 30, 1992. Conditional approval of the Work Plan was received from the U.S. EPA on May 20, 1992. Responses were provided to the EPAs on June 23. The revised Work Plan was submitted to the EPAs on July 15, 1992. The Ohio EPA approved the Work Plan on July 29, 1992. The radiological walkover survey was completed on July 31, 1992, to highlight areas exceeding the field action level.

Based on results from the radiological walkover survey, the areas exceeding the field action level are more extensive than originally thought. To date, all areas exceeding the field action level are on FEMP property. Due to this increase in scope, the schedule and approach will be resubmitted in August. Other August activities will include the initiation of excavation activities in the STP area.

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Completed January 23, 1992	January 23, 1992
Submit Revised Work Plan to the U.S. EPA	Completed March 30, 1992	March 30, 1992
Resubmit Revised Work Plan to the U. S. EPA	Completed July 15, 1992	July 15, 1992
Phase I - Completion of walkover survey and excavation of contaminated soils.	Open, schedule under review.	August 18, 1992
Phase II - Complete post excavation and submit interim reports.	Open, on schedule.	April 18, 1993
Phase III - Revise RSE and submit final report.	Open, on schedule.	July 18, 1993

RA No. 15, Scrap Metal Piles

The Scrap Metal Piles Removal Action will detail the stabilization and disposition of LLW scrap metal currently stockpiled onsite. This removal action will eliminate the potential threat of additional material releases to the environment. Approximately 1,300 tons of scrap copper along with approximately 3,000 tons of recoverable scrap metals are the focus of this removal action.

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RA No. 15, Scrap Metal Piles (continued)

The revised Work Plan was resubmitted to the U.S. EPA on April 3, 1992. Conditional approval of the Work Plan was received from the U.S. EPA on May 20, 1992. Responses and revised Work Plan pages were provided to the EPAs on June 26, 1992. Draft U.S. EPA approval of the comment-responses was received on July 29.

July activities included the review of the draft subcontractor's Removal Action Project Plan (RAPP) for Phase I. August activities will include revising the RAPP by the contractor to incorporate FEMP comments, submittal of the RAPP for U.S. EPA and Ohio EPA review and approval, and preparation of internal safety documentation.

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Completed January 31, 1992	January 31, 1992
Submit Revised Work Plan to the U.S. EPA	Completed April 3, 1992	April 3, 1992
Phase I - Award of contract	Completed June 19, 1992	June 30, 1992
Phase I - Submit Subcontractor's Removal Action Project Plan	Open, on schedule.	September 30, 1992
Phase I - Complete	Open, on schedule.	March 30, 1994
Phase IIA - Initiate Containerization	Open, on schedule.	March 30, 1994

RA No. 16, Collect Uncontrolled Production Area Runoff – Northeast

The scope of this removal action is to collect the remaining stormwater from the perimeter of the 136 acre production area that currently discharges to Paddy's Run and divert it through the existing storm sewer system to the Storm Water Retention Basin.

The revised Work Plan has been reviewed, and conditionally approved, pending incorporation of comments, by the Ohio EPA on June 23, 1992, and the U.S. EPA on July 8, 1992. Comments are being incorporated.

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RA No. 16, Collect Uncontrolled Production Area Runoff – Northeast (continued)

A pre-bid meeting was held on July 28, 1992.

Work in August will concentrate on submitting the revised Work Plan, receiving and evaluating bids, and awarding the construction contract.

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Completed March 2, 1992	March 2, 1992
Complete Removal Action	Open, on schedule	August 30, 1993

RA No. 17, Improved Storage of Soil and Debris

This removal action will include the management and appropriate storage of contaminated soil and debris onsite. This will eliminate the potential threat of additional material releases to the environment due to wind, rain, or vehicular traffic. The activities in this Removal Action will include characterization, interim storage, and management of the contaminated soil and debris materials until the final remediation under Operable Unit 3.

The draft Work Plan was submitted to the EPAs on March 25, 1992. Draft comments indicating U.S. EPA disapproval of the Work Plan were received on July 29, 1992. August activities will include comment resolutions and revisions to the Work Plan. Final U.S. EPA comments on the LDR waivers are still awaiting receipt.

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Completed March 25, 1992	March 25, 1992
Receive U.S. EPA comments on the Work Plan	July 29, 1992	April 24, 1992
Submit Revised Work Plan to the U.S. EPA	Open, On schedule	August 28, 1992

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RA No. 18, Control Exposed Material In Pit 5

The Control Exposed Material in Pit 5 Removal Action is being developed and implemented using a phased approach. This phased approach considers and utilizes information obtained from the liner repair activities, the pit berm investigation, which addresses the overall pit structural integrity, and the significance and magnitude of potential and actual emissions from the waste pit. The schedule for this Removal Action is currently being revised to reflect the current philosophy for accomplishing the scope. An Alternatives Evaluation identified the dredge method as the most viable means to transfer material within Pit 5.

Activities for July included resolving Ohio EPA and U.S. EPA comments and issuance, for approval, of the revised Removal Action Work Plan, and continuing design work. The Safety Assessment and Health & Safety Plan proceeded on schedule. An informational construction package outlining the site preparation requirement was also submitted.

Planned activities for August include the continuation of design pending approval of the Work Plan by EPA.

KEY MILESTONES	STATUS	DUE DATE
Submit a Removal Action Work Plan to the U.S. EPA and the Ohio EPA	Completed March 26, 1992	March 30, 1992

RA No. 19, Plant 7 Dismantling

The Plant 7 Dismantling Removal Action will include decontamination and dismantling of the Plant 7 structure. This dismantling will eliminate the potential threat of additional material releases and the safety hazard due to histoplasmosis. The activities in this removal action will include characterization, decontamination, removal, containerization, and disposal of the materials making up the above ground portion of the facility.

July activities included design kickoff and scope review of the Characterization Plan. August activities will include continued preparation of the Characterization Plan and project functional requirements.

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Open, on schedule	April 20, 1993

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Period Ending July 31, 1992

RA No. 20, Stabilization of UNH Inventories

The Stabilization of UNH Inventories Removal Action will remove and prepare for safe storage approximately 230,000 gallons of acidic UNH that is currently stored in 21 tanks in and around Plant 2/3. Existing processing equipment will be used to neutralize the solutions, filter the precipitate, and package the resulting filter cake in double containment for safe storage. This activity was previously part of RA No. 12, Safe Shutdown, but is being accelerated as a separate expedited response.

Activities in July included pumping 3,000 gallons from Tank F2-608 and 2,100 gallons from Tank D1-4 into Tank F1-25 to make the first demonstration blend batch. Analytical results indicated that the U-235 enrichment is within specification. During initial blending operations, unexpected high levels of NO₂ fumes triggered an area alarm for NO_x monitoring. While investigating the alarm, one employee received calculated NO₂ exposure. Processing was delayed pending an internal review of this event, additional worker training, and issuance of personal NO₂ monitors.

August activities will include continued system operability testing and incorporation of lessons learned from NO₂ exposure incident.

KEY MILESTONES	STATUS	DUE DATE
System Integrity Testing	Completed February 13, 1992	February 13, 1992
Submit Flow Charts to the U.S. EPA	Completed April 8, 1992	March 31, 1992
Commence Processing Material	Achieved July 6, 1992	July 6, 1992
Finish Processing Material	Open	Schedule being developed

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RA No. 21, Expedited Silo 3

On December 13, 1991, an Action Memorandum was issued to initiate an expedited removal action. The Silo 3 Removal Action mitigated the potential release of material to the environment and included the following actions:

- All obvious openings in the dust collector hopper were covered and sealed.
- The dust collector was removed.
- All obvious pathways for release were capped or covered.

Implementation of the Removal Action was initiated on December 20, 1991. The material within the dust collector hopper exposed to the environment was stabilized on December 21, 1991. Loose equipment on the silo dome was removed.

KEY MILESTONES	STATUS	DUE DATE
Complete removal of the dust collector on Silo 3 dome	Completed January 8, 1992	January 15, 1992

Work in August will center on completion and submittal of the Material Evaluation Form and disposition of the equipment removed from Silo 3. Determining the applicability of the metal oxide material as hazardous waste by definition of the Resource Conservation and Recovery Act will also be completed in August.

RA No. 22, Waste Pit Area Containment Improvement

A Removal Site Evaluation (RSE) was prepared in 1991 and submitted to DOE. This RSE is presently being updated to include information on the Berm for Pit 4 and the Burn Pit cap. The Action Plan to address the Waste Pit Area Roads and Exposed Surfaces was transmitted to DOE on February 24, 1992. This Action Plan is now being used as the basis for developing a Work Plan.

Activities for July included the final issuance of the Alternatives Evaluation and issuance of the draft Removal Action Work Plan to DOE on July 22, 1992.

Planned activities for August include the submittal of the Final Work Plan to EPA on August 31, 1992.

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RA No. 22, Waste Pit Area Containment Improvement (continued)

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Open, on schedule	August 31, 1992

RA No. 23, Inactive Flyash Pile

A field investigation was conducted to determine if select locations within the Inactive Flyash Pile and South Field Disposal area boundary (RA No. 8) would require material to be removed. On June 24, contaminated debris from three of the regulated areas identified in the survey report were collected and placed in interim controlled storage. The contaminated items collected were a plastic bag (approximately 1 gallon) containing soil, a 1 foot x 2 feet section of transite and two small pieces of yellow material. Results of the survey were submitted on June 29, 1992. By removal of the debris, DOE-FN determined that no additional action is required until remediation.

RA No. 24, Pilot Plant Sump

This sump is located on the southwest side of the Pilot Plant. The sump consists of a stainless steel cylinder approximately two feet in diameter and ten feet deep. This sump was built to remove liquids from the floor drains of the Pilot Plant and was actively used only during the renovation of the Pilot Plant in 1969.

The sump is filled with a thick liquid and sludge. Analytical results of the sump contents show high concentrations of metals: lead, copper, chromium, nickel, as well as thorium and volatile organic compounds.

The Work Plan was submitted to the EPAs on July 24.

The pump-out of accumulated water from the Pilot Plant sump occurred on July 24, 1992. Pumping will continue on a monthly basis until the removal of the sump is initiated.

August activities will include comment resolution and submittal of the revised Work Plan to the EPAs, pending receipt of their comments.

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RA No. 24, Pilot Plant Sump (continued)

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Completed July 24, 1992	July 31, 1992

RA No. 25, Nitric Acid Tank Car and Area

The Nitric Acid Rail Car is located on the northern perimeter of the production area and east of Building 63. The FEMP RCRA Part A and Part B application identify this tank car and area surrounding it as a Hazardous Waste Management Unit.

This high-grade, stainless steel tank car has a capacity of approximately 100,000 gallons and measures approximately 10 feet wide x 40 feet long x 15 feet high. This unit operated from 1952 until about 1989. The tank car stored nitric acid used at the FEMP. Based on recent analysis, the tank car now contains 50-100 gallons of nitric acid. This removal action includes removal of residual contents from the tank car followed by the tank car's decontamination and dispositioning.

July activities included initiation of preparation of the Removal Site Evaluation and the Work Plan. August activities will include the initial Work Plan and Removal Site Evaluation submittal to DOE.

KEY MILESTONES	STATUS	DUE DATE
Submit Work Plan to the U.S. EPA	Open, on schedule	October 30, 1992

RA No. 26, Asbestos Removals (Asbestos Program)

This removal action documents ongoing asbestos abatement activity at the FEMP to mitigate the potential for contaminant release and migration. Abatements within the Asbestos Program include in-situ repairs, encasement, and encapsulation as well as removals.

Work Procedures Compendium for this Removal Action were submitted on May 19. U.S. EPA disapproval was received on July 10. August activities will include the submittal of the revised compendium and continuing field activities in asbestos material identification and abatement.

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PROGRESS REPORT**

Period Ending July 31, 1992

RA No. 26, Asbestos Removals (Asbestos Program) (continued)

KEY MILESTONES	STATUS	DUE DATE
Submit Work Procedures to the U.S. EPA	Completed May 19, 1992	May 19, 1992
Update existing internal procedures to ensure that appropriate documentation is entered into the administrative record file	To be updated annually	June 30, 1993

RA No. 27, Management of Contaminated Structures at the FEMP

Submit EE/CA study to identify alternatives for managing contaminated structures; document the selection of a response(s) that will mitigate the potential threat to workers, the general public, and the environment associated with these structures; and, address health and environmental impacts associated with the proposed action.

Activities in July included continued document preparation and parallel review of 90% document. A scope and methodology briefing was presented at the July Program Managers' meeting. August activities will include document submittal for DOE EM-1 review.

KEY MILESTONES	STATUS	DUE DATE
Submit Engineering Evaluation/Cost Analysis (EE/CA) to the U.S. EPA to support Proposed Removal Actions for Managing Contaminated Structures	Open, on schedule	December 15, 1992

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1.0 Operable Unit 1

Operable Unit 1, as defined in the Amended Consent Agreement, includes Waste Pits 1 - 6, Clearwell, Burn Pit, berms, liners and soil within the operable unit boundary.

1.1 Field Investigation

1.1.1 13-Well Program

Scope:

The 13 wells were installed into Waste Pits 1 - 4 and the Burn Pit. Waste samples were collected at various locations during boring operations and analyzed for Hazardous Substance List (HSL) parameters and characteristic radionuclides. Wells were developed and sampled to determine constituents of concern in the waste pit leachate.

Status:

All waste pit wells have been sampled per the approved work plan. Laboratory analysis was completed on all Operable Unit 1 samples in February. Validation of data collected from 1986 through the 13-well program was completed in May for chemical analytes, and was completed in July for radiological analytes. Entry into the RI/FS database is complete. This activity is complete and will not be updated in future reports.

Issues/Corrective Actions:

None to report.

1.1.2 Radon Sampling Program

Scope:

The Radon Sampling Program was initiated in an effort to develop a representative measurement of radon releases from the waste pit area. The data will be used to support National Emission Standards for Hazardous Air Pollutants (NESHAP) compliance and Remedial Investigation/Feasibility Study (RI/FS) characterization requirements. The program consists of a one-time measurement of radon release using large area activated charcoal collectors (LAACC). Approximately 100 LAACCs were placed on Waste Pits 1, 2, and 3. The LAACCs were left on the pits for 24 hours and then removed and analyzed. Continuous ambient air radon monitoring was also conducted during the period.

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1.1.2 Radon Sampling Program (continued)

Status:

The radon sampling is complete for Waste Pits 1, 2 and 3. The data has been evaluated and a draft report has been issued.

As a result of a discussion with the U.S. EPA on May 27, 1992, concerning the issue of sampling Pits 4, 5 and the Clearwell, it was determined that Pit 4 will need to be sampled in addition to Pits 1, 2, and 3. Pit 5 and the Clearwell will not be sampled at this time.

Issues:

On May 27, 1992, a conference call was held with the U.S. EPA to determine if radon flux measurements should be taken for Pits 4, 5, and the Clearwell. At the request of U.S. EPA, radon sampling of the Pit 4 vents will be performed along with a few representative samples from the Pit 4 cap. Radon sampling for Pit 5 will not have to be conducted if the removal action to control emissions is completed as scheduled.

Corrective Actions:

Install Pit 4 radon flux measurement devices.

1.1.3 Pits 5 and 6 and the Clearwell Sampling Program

Scope:

The objectives of the Pits 5, 6, and Clearwell Sampling Program are to obtain sufficient quantities of samples for treatability studies and to provide additional Resource Conservation and Recovery Act (RCRA) characterization information on the waste pits. The pits were sampled using a clamshell and crane.

Status:

The sampling of Pits 5, 6, and the Clearwell is complete. These samples have been shipped to the treatability laboratory where stabilization testing is ongoing.

Issues/Corrective Actions:

None to report.

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1.2 Treatability Studies

Scope:

The Operable Unit 1 treatability studies will evaluate the two treatment process options identified in the Operable Unit 1 Initial Screening of Alternatives document, cement stabilization and vitrification. The technical feasibility of these technologies will be evaluated by conducting a series of experiments on both composite waste samples and individual strata samples. Ranges of formulations will be investigated as will other performance criteria such as compressive strength, leachability, bulking factor and permeability. For cement stabilization, binding agents that will be evaluated include portland cement, flyash, and sodium silicate. Clay (attapulgite and clinoptilolite) will be added to reduce the leachability of metals in the waste. Glass formers and modifiers being considered for vitrification are flyash, soil, and sodium hydroxide.

The stabilization testing will consist of two phases, the preliminary phase being reagent range-finding experiments using composite samples, and the advanced phase consisting of testing on strata samples. Within each phase are two stages permitting additional reagent testing as necessary. An optional phase to evaluate waste form durability, radon emanation, and radon leaching is also being considered.

Status:

Preliminary phase Stage 1 is complete. Preparation of preliminary phase Stage 2 molds for the Clearwell and Burn Pit were completed in July 1992. Curing of Stage 2 molds for Pits 1, 2, 3, 4, and 5 were completed in July 1992 and unconfined compressive strength (UCS) testing is in progress. Stage 2 was not performed on Pit 6 since the Stage 1 testing provided adequate results. Stage 1 UCS results for the Burn Pit were unexpectedly low, possibly due to organic contaminants in the raw waste. New formulations were prepared for Stage 2 testing, some using blast furnace slag.

All preliminary phase Stage 1 vitrification analyses consisting of the Nuclear Waste Glass Product Consistency Tests (PCT) and the modified toxicity characteristic leaching procedure (MTCLP) were completed and loaded into the treatability database on July 16, 1992.

Issues:

The delay in collecting samples from the Clearwell will impact the treatability study schedule unless additional actions are taken as proposed.

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1.2 Treatability Studies (continued)

Corrective Actions:

A schedule recovery plan has been implemented to maintain schedule milestones supporting preparation of the Treatability Study Report.

The advanced phase of treatability testing will proceed on an individual pit basis after preliminary analytical results have been evaluated as described in the recovery plan.

1.3 Remedial Investigation

Scope:

A RI Report will be prepared in accordance with the U.S. EPA Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (EPA Directive 93553-01) and the approved Risk Assessment Work Plan Addendum.

The first activities scheduled for the RI are field data collection and analysis. The objective of the field data analysis activity is to evaluate the preliminary data available from field measurements while awaiting results of lab analysis.

Status:

The analysis of waste and area contamination has been initiated but is being delayed by data acquisition problems.

Issues:

Delays in completion of data validation and entry into the database are slowing evaluation of the RI data and delaying the submission of the draft RI Report.

As a result of a recent inspection of seven Operable Unit 1 monitoring wells, it was observed that staining and minor water leakage are occurring. The wells were installed in 1985 by a previous contractor. As a result of the potential leakage the wells will be evaluated further to determine if they should be removed from service.

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1.3 Remedial Investigation (continued)

Corrective Actions:

Additional staff have been assigned to assist in completion of entry into the database. Work is proceeding on non-data-related tasks such as field program descriptions and text editing. A recovery plan is in progress for RI production.

A CCB package is being constructed requesting funding for the removal of all defective wells from service.

OU 1 REMEDIAL INVESTIGATION REPORT

PRIMARY

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Details the nature and extent of contaminants within the Operable Unit 1 study area. Estimates the volume of contaminated media and materials. Provides a baseline risk assessment and establishes remedial action objectives.	10/12/93 C	12/11/93 C	01/10/94 C

C = Consent Agreement Date

F = Forecast Complete

A = Actual

1.4 Planned Activities for August 1992

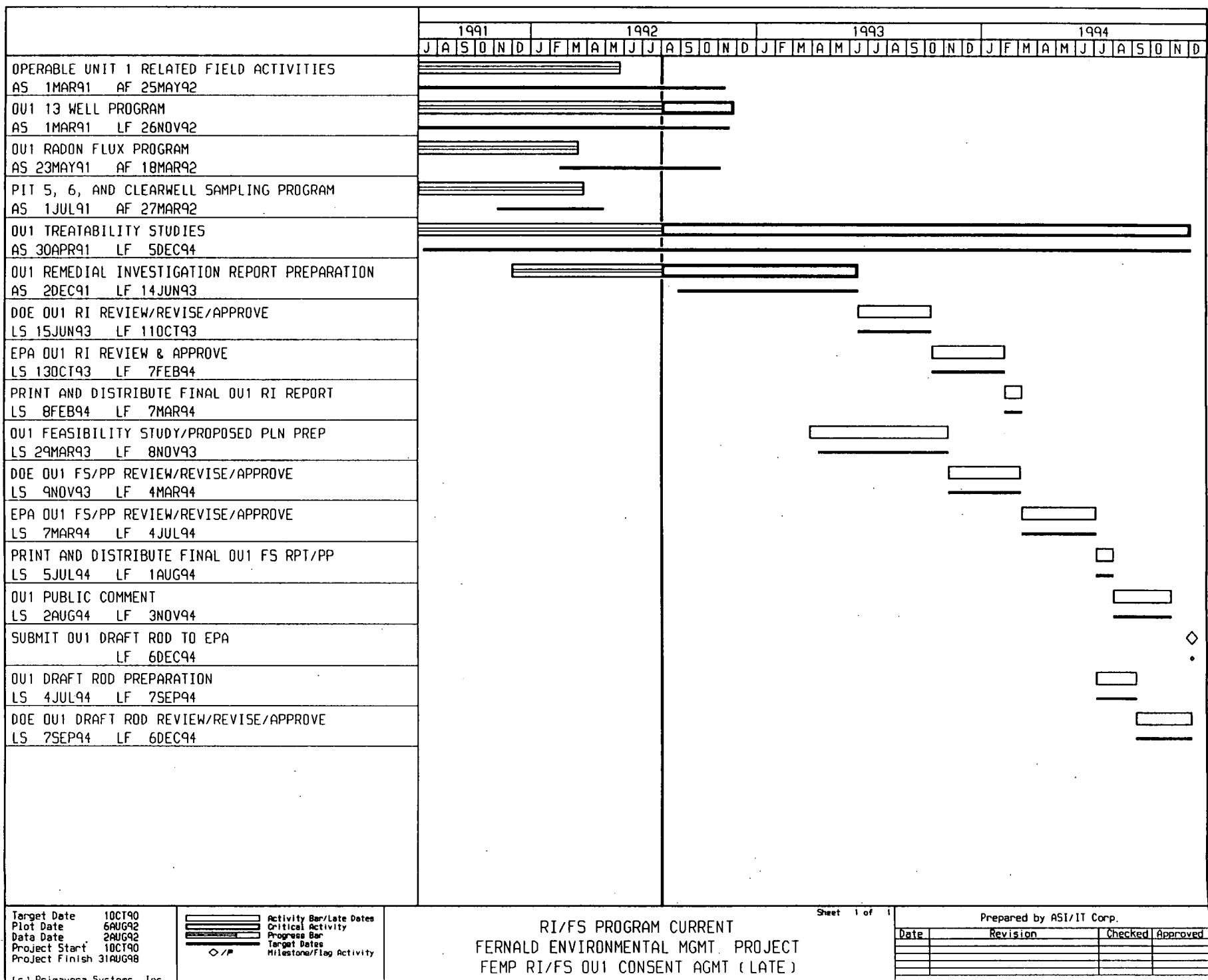
Complete verification of database entries for the 13-well program.

Continue preparation of the draft RI Report and recovery schedule.

Initiate the advanced phase Stage 1 stabilization and vitrification treatability experiments.

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2.0 Operable Unit 2

Operable Unit 2, as defined in the Amended Consent Agreement, includes the Flyash Piles, other South Field disposal areas, lime sludge ponds, solid waste landfill, berms, liners, and soil within the operable unit boundary.

2.1 Field Investigation

2.1.1 19-Boring/Well Program

Scope:

This program provides additional characterization of the individual waste units within Operable Unit 2. Borings are located in both Flyash Piles, the Solid Waste Landfill and the South Field. If leachate is encountered during boring operations, wells will be installed and sampled. Sampling and characterization of standing water in the north Lime Sludge Pond is also included in the program.

Status:

All field characterization activities associated with the original work plan have been completed. The analytical results from the original program have been received, validated, and evaluated as per the work plan and data user requirements.

Additional sampling was required, caused in part by not testing certain parameters for samples taken in the Active and Inactive Flyash Piles, the Solid Waste Landfill, and the South Field, or due to suspected matrix effects on several parameters.

Various parameters required analysis during the additional sampling from these locations, including TCLP volatile and semivolatile organic compounds, Hazardous Substance List (HSL), Appendix IX, full radiological, total organic carbon, and simulated rainwater leaching procedure (SRLP).

A Work Plan Addendum was written for extracting the additional samples. The additional borings were advanced in the areas indicated above in order to collect the parameters that were inadvertently missed or sustained matrix interference during laboratory analysis.

The samples were taken per the Work Plan Addendum and sent to the contract laboratory where analysis on the chemical and radiological parameters was completed during April 1992.

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2.1.1 19-Boring/Well Program (Continued)

Data validation was completed in June and no delay is expected in the delivery to U.S. EPA of the Operable Unit 2 RI Report as a result of this additional effort. This activity is complete, and will not be updated in future reports.

Issues/Corrective Actions:

None to report.

2.1.2 Additional HSL Parameters Sampling Program

Scope:

This program provides for collection of samples from four shallow borings in the South Field. These samples are to be analyzed for HSL parameters to supplement the limited data available for this area.

Status:

All sample collection activities have been completed in prior months. Laboratory analyses for the additional sampling and subsequent HSL laboratory analysis have been completed.

Four additional samples were taken to augment the data set as part of the recent resampling effort described in Section 2.1.1. All data gathered from this program has been included in the Operable Unit 2 final RI data set. This activity is complete and will not be updated in future reports.

Issues/Corrective Actions:

None to report.

2.1.3 Work Plan Addendum - Installation of Monitoring Well 1433

Scope:

The Work Plan Addendum defines additional sampling and analysis which is required for the characterization of the northwest portion of the South Field, just east of the Inactive Flyash Pile. Installation and sampling of Monitoring Well 1433, near boring 1401, is desirable to further characterize the fill/soil material and perched groundwater/leachate that are presumed present at that location that have not been encountered before.

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2.1.3 Work Plan Addendum - Installation of Monitoring Well 1433 (Continued)

Status:

Monitoring Well 1433 was installed on July 29, 1992.

Issues/Corrective Actions:

Very little groundwater was encountered during the installation of Monitoring Well 1433. Development and sampling activities will be delayed until the well recharges with sufficient quantities of groundwater.

2.2 Treatability Studies

Scope:

The purpose of this study is to support the FS and subsequent remedy selection for Operable Unit 2. The study will demonstrate whether waste stabilization can achieve the desired level of material strength and will provide quantitative leaching data for geochemical and computer modeling of groundwater contaminant transport. The study is composed of two parts: two preliminary phases (to support remedy screening) and an advanced phase (to support remedy selection). The preliminary phase involves evaluating a range of stabilization mix formulations in order to determine a representative formulation which meets the desired strength criteria. The advanced phase involves performing tests on stabilized waste using representative formulations determined in the preliminary phases.

Status:

The Treatability Study Report was submitted to the U.S. EPA and the Ohio EPA for review on July 14, 1992.

Issues/Corrective Actions:

None to report.

2.3 Remedial Investigation

The purpose of the RI is to provide a summary of the field investigations and to support the FS by defining the nature and extent of the contaminants in the Operable Unit 2 study area; estimating the volume of contaminated media and materials; and providing a baseline risk assessment which establishes remedial action objectives (RAOs).

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2.3 Remedial Investigation (Continued)

Status:

A comment resolution meeting with WEMCO/DOE-FN was held on July 1, 1992, on the draft RI Report. Incorporation of these comments continued throughout the month of July. The RI Report is on schedule for submission to DOE-HQ on August 14, 1992.

Issues:

A schedule recovery plan has been implemented to minimize the impact from data validation delays. Consent Agreement delivery dates are not impacted. The final validated Operable Unit 2 data set was available on June 15, 1992, and will be used in all subsequent versions of the RI Report, including all baseline risk assessment calculations.

Corrective Action:

The schedule recovery plan calls for the following major points:

- Incorporation of WEMCO/DOE-FN/DOE-HQ review comments from June 18 to August 7 (including baseline risk assessment recalculations using the final Operable Unit 2 validated data package).
- Internal ASI/IT review begins on August 7.
- Submittal for formal DOE-HQ review on August 14.
- Incorporation of comments from September 14 to October 13.
- Submittal to the U.S. EPA and the Ohio EPA on October 14.

OU 2 REMEDIAL INVESTIGATION REPORT

PRIMARY

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Details the nature and extent of contaminants within the Operable Unit 2 study area. Estimates the volume of contaminated media and materials. Provides a baseline risk assessment and establishes remedial action objectives.	10/19/92 C	12/17/92 C	01/14/93 C

C = Consent Agreement Date

F = Forecast Complete

A = Actual

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2.4 Feasibility Study

The purpose of the FS is to evaluate alternatives in detail with respect to the nine evaluation criteria developed by the U.S. EPA. The alternatives are analyzed individually against each criterion and then compared against one another to determine their respective strengths and weaknesses and to identify the key tradeoffs that must be balanced for the site.

Status:

The characterization review and alternative assessment were initiated in February 1992. The process of reviewing and updating applicable or relevant and appropriate requirements (ARARs) was initiated in March. Fate and transport model development and data analysis in support of the FS risk assessment were initiated in May. Revisions to the alternatives as a result of the Amended Consent Agreement were completed in July. In addition, several new off-site disposal options were added to the alternatives from the Initial Screening of Alternatives Report. These options include both existing and potential future facilities.

Issues:

FS risk assessment activities cannot be completed until the baseline risk assessment is completed. These delays can pose a potential schedule impact on the FS Report.

Corrective Actions:

A recovery plan for the FS was completed in July. FS risk assessment activities began in mid-July in parallel with the baseline activities.

OU 2 FEASIBILITY STUDY REPORT

PRIMARY

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Describes and analyzes potential remedial alternatives. A comparative analysis is performed for all alternatives.	03/15/93 C	05/13/93 C	06/13/93 C

C = Consent Agreement Date

F = Forecast Complete

A = Actual

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2.5 Planned Activities for August 1992

Complete incorporation of WEMCO/DOE-FN/preliminary DOE-HQ comments into the RI Report and submit for DOE-HQ review on August 14, 1992.

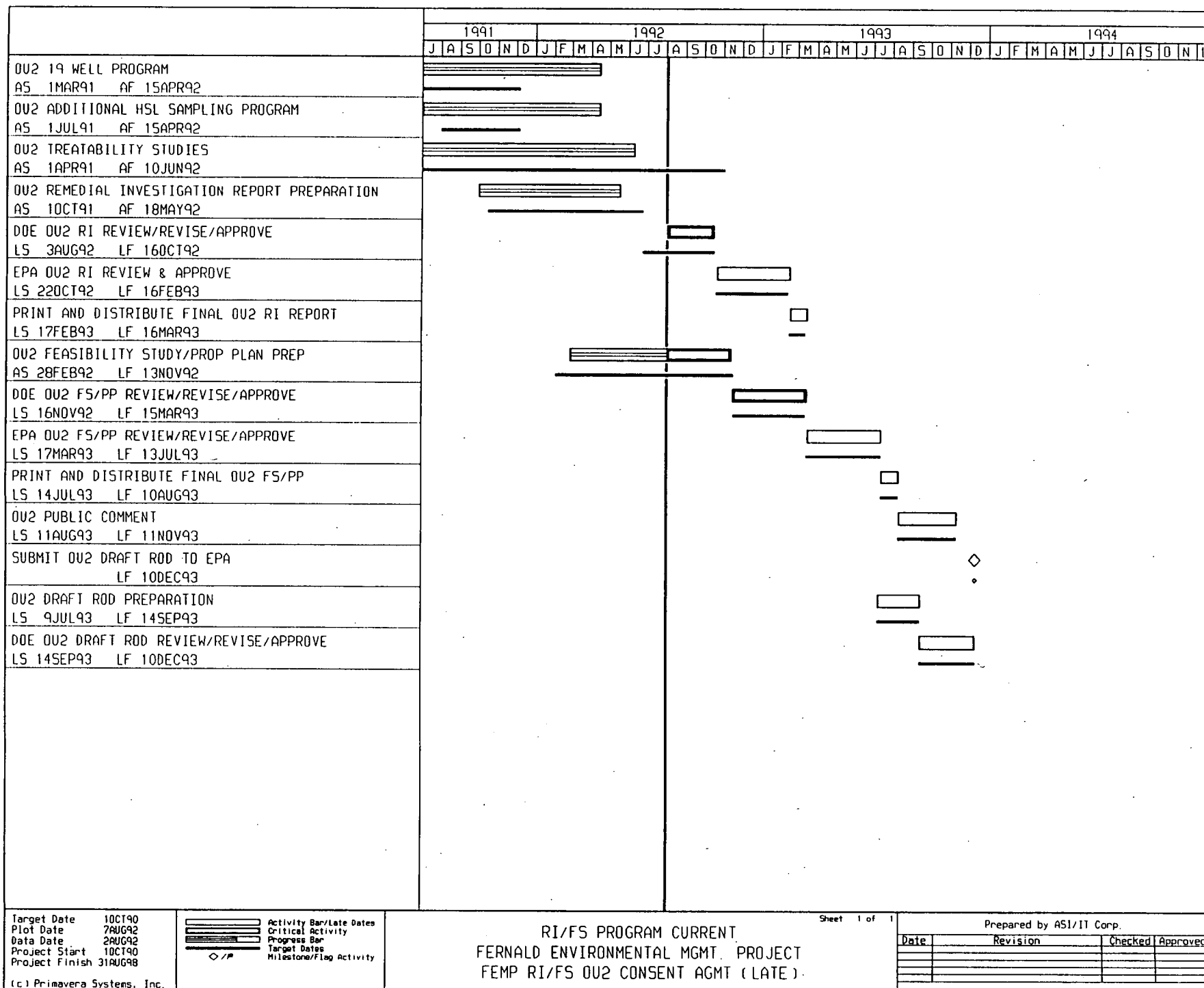
Continue FS risk assessment activities and evaluation of alternatives for effectiveness and implementability.

Complete first FS cost estimates for the revised alternatives.

Commence well development and sampling activities associated with Monitoring Well 1433 once the well charges with sufficient quantities of groundwater.

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3.0 Operable Unit 3

Operable Unit 3 as defined in the Amended Consent Agreement includes the Production Area and production associated facilities and equipment (includes all above - and below-grade improvements) including, but not limited to, all structures, equipment, utilities, drums, tanks, solid waste, waste product, thorium, effluent lines, K-65 transfer lines, wastewater treatment facilities, fire training facilities, scrap metal piles, feed stocks, and coal pile.

3.1 Initial Scoping/Work Plan Revisions

Operable Unit 3 initial scoping/work plan revision activities in July included development of required field instrument survey, sample collection and laboratory analytical procedures, and development of Operable Unit 3 component-specific field implementation procedures (FIPs). U.S. EPA and Ohio EPA comments on the Operable Unit 3 RI/FS Work Plan Addendum are due on August 1, 1992.

OU3 WORK PLAN ADDENDUM

WORK PLAN

SCOPE	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
The work plan/appendices will include an initial evaluation of Operable Unit 3 (e.g., conceptual models, waste/contaminant quantities), a work plan rationale (e.g., data requirements, SAP approach) and specific Operable Unit 3 RI/FS tasks.	08/01/92 C	08/24/92 C

C = Consent Agreement Date

F = Forecast Complete

A = Actual

3.2 Issues/Corrective Actions

None to report.

3.3 Planned Activities for August 1992

Resolution of the of U.S. EPA and Ohio EPA comments on Operable Unit 3 RI/FS Work Plan Addendum.

Continue preparation for development of FIPs.

Continue development of required Operable Unit 3 field instrument survey, sample collection, and laboratory analytical procedures.

Submittal of a draft FIP for U.S. and Ohio EPA review.

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3.3 Planned Activities for August 1992 (continued)

Hold a comment resolution/FIP approach technical meeting with U.S. EPA and Ohio EPA.

Staffing increases will continue in August. At this point, 47 new positions have been approved. One person has been internally promoted to Technologist I. An offer has been made to fill an Environmental Monitoring Technician position.

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4.0 Operable Unit 4

Operable Unit 4, as defined in the Amended Consent Agreement, consists of Silos 1, 2, 3, and 4, the silo berms, the Decant Tank System, and soil within the operable unit boundary.

4.1 Field Investigation

4.1.1 Slant Borings

Scope:

Five slant or angled borings were advanced beneath Silos 1 and 2 and the decant sump tank.

Status:

All sampling activities and laboratory analysis of the samples have been completed. All analytical results have been validated and entered into the RI/FS database. This activity is complete and will not be updated in future reports.

Issues/Corrective Actions:

None to report.

4.1.2 Vertical Borings:

Scope:

Four vertical borings were advanced into the earthen berms of Silos 1 and 2 to identify contaminants transported from the silos in the area of the slurry transfer decant ports.

Status:

All sampling activities and laboratory analysis of the samples have been completed. Data validation and database entry are complete.

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4.1.2 Vertical Borings: (continued)

Issues:

During examination of the sample validation results, it was determined that three samples from three of the four vertical borings were inadvertently not collected during the initial sampling operations. The three missed samples were to be analyzed for full radiological parameters. The missed samples were to be collected at the 10-foot interval of the first third of Borings 1620, 1622, and 1623.

Corrective Actions:

The contract laboratory has completed the analysis of the samples that were retrieved from archive storage and submitted for analysis for the missed parameters at the indicated intervals.

4.1.3 Silos 1 and 2 Contents:

Scope:

Silos 1 and 2 contents were sampled from three of the four manways at each silo. The contract laboratory completed the analysis for the Silos 1 and 2 samples in January 1992.

Status:

All sampling activities and laboratory analyses of the samples have been completed. Data validation is complete. Evaluation of validation results and database entry have been completed. This activity is complete and will not be updated in future reports.

Issues/Corrective Actions:

None to report.

4.2 Treatability Studies

Scope:

The purpose of a treatability study work plan is to provide additional information to support the FS and subsequent remedy selection for Operable Unit 4. There are two separate treatability work plans/studies to support the Operable Unit 4 FS. One study considers cement stabilization of Silos 1, 2, and 3 material and chemical extraction, leachate stabilization, and leachate purification of Silos 1 and 2 material. The second treatability study considers the vitrification of Silos 1, 2, and 3 material.

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4.2 Treatability Studies (Continued)

The Treatability Study Work Plan (for cementation and chemical extraction) will demonstrate whether stabilization can achieve a desired level of material strength, provide information to help determine the effectiveness of chemical extraction, and to provide data for use in fate and transport modeling. The study is composed of three preliminary phases and an advanced phase. The preliminary phases will determine the potential reagents and conditions for stabilization and/or extraction on composites of the silo material. The advanced phase will evaluate the material variability by testing formulations and/or extraction on the top, middle, and bottom layers from each silo.

The Treatability Study Work Plan for the Vitrification of Residues from Silos 1, 2, and 3 considers vitrification of silo material, radon emanation rate from the vitrified waste, and the leachability of the vitrified waste.

Status:

Stabilization Experiments - Silos 1, 2, and 3 advanced phase experiments are complete and analyses are in progress. For TCLP analyses, there are 12 samples and two quality assurance (QA) samples for Silo 1 and 2 material and two samples and a QA sample for Silo 3 material. For the 5-day static leach test analyses, there is an identical number of samples. Permeability testing was initiated on July 6, 1992 and completed on July 29, 1992.

Chemical Extraction tests - The preliminary phase Stage 1 of the precipitation experiments were completed. Preliminary phase Stage 2 experiments are in progress.

Vitrification Treatability Tests - The 100 g test melts were completed this month. Glass formulations for Sequence A-D Tests were developed based upon the 100 g tests. Full-scale melts also started on schedule, on July 29, 1992; this was a Sequence A, open system test (continuously monitoring radon emanation).

Issues/Corrective Actions:

None to report.

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4.3 Remedial Investigation Report

Scope:

The purpose of the RI is to provide a summary of the field investigations and to support the FS by defining the nature and extent of the contaminants in the Operable Unit 4 study area; estimating the volume of contaminated media and materials; and providing a baseline risk assessment, which establishes remedial action objectives.

Status:

Activities continued on the Operable Unit 4 RI during July. Analyses continued on the field data collected during the characterization program. New figures are being generated depicting the Silos 1 and 2 subsoil slant borings and vertical berm borings. Tables summarizing the slant and vertical boring data and the Silos 1, 2 and 3 content data are proceeding. Technical evaluations of the data are ongoing. The baseline risk assessment modeling for Silo 3 contents is continuing.

Issues:

Delays in completion of data validation and entry into the database has delayed evaluation of the RI data, as reported in the June monthly report. No impact to the Consent Agreement delivery date for the RI is anticipated.

Corrective Action:

A recovery plan has been initiated to ensure the RI will be completed and delivered per Consent Agreement dates.

OU4 REMEDIAL INVESTIGATION REPORT

PRIMARY

SCOPE	SUBMIT TO DOE	SUBMIT TO DOE/HQ	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Details the nature and extent of contaminants in the OU4 study area. Estimates the volume of contaminated media and materials. Provides a baseline risk assessment and establishes remedial action objectives.	12/21/92 C	02/17/93 C	04/19/93 C	06/18/93 C	07/18/93 C

C = Consent Agreement Date

F = Forecast Complete

A = Actual

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4.3 Remedial Investigation Report (Continued)

Continuing activities include evaluation of the field and analytical data, revising previous drafts of the RI, creating new figures and tables, and initiation of the risk assessment model for Silo 3.

4.4 Feasibility Study

Scope:

The purpose of the FS is to evaluate alternatives in detail with respect to the nine evaluation criteria developed by the U.S. EPA. The alternatives are analyzed individually against each criterion and then compared against one another to determine their respective strengths and weaknesses and to identify the key tradeoffs that must be balanced for the site.

Status:

The revision of alternatives as they were described in the U.S. EPA-approved Initial Screening of Alternatives proceeded during July at the direction of DOE-FN and is designed to provide separate alternatives for the different waste media. For example, alternatives to disposition Silos 1 and 2 contents are being created; alternatives for Silo 3 contents only are being revised; silo structures, berms and subsoils are being grouped in another set of alternatives; and Silo 4 is being dispositioned in separate alternatives. Disposal options and locations, both on-property and off-site, were discussed with WEMCO and DOE-FN during July and are being included as appropriate to the alternatives. Still under discussion between WEMCO, DOE and ASI/IT is if all off-site alternatives include on-property interim storage with adequate capacity for up to 10 years. Alternative revisions are ongoing.

Issues/Corrective Actions:

None to report.

OU4 FEASIBILITY STUDY

PRIMARY

SCOPE	SUBMIT TO DOE	SUBMIT TO DOE/HQ	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Describes and analyzes potential remedial alternatives. A comparative analysis is performed for all alternatives.	05/14/93 C	07/13/93 C	09/09/93 C	11/10/93 C	12/09/93 C

C = Consent Agreement Date

F = Forecast Complete

A = Actual

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4.5 Planned Activities for August 1992

Continue revisions to the RI Report. Initiate baseline risk assessment modeling for Silos 1 and 2 contents.

Continue revision of FS alternatives.

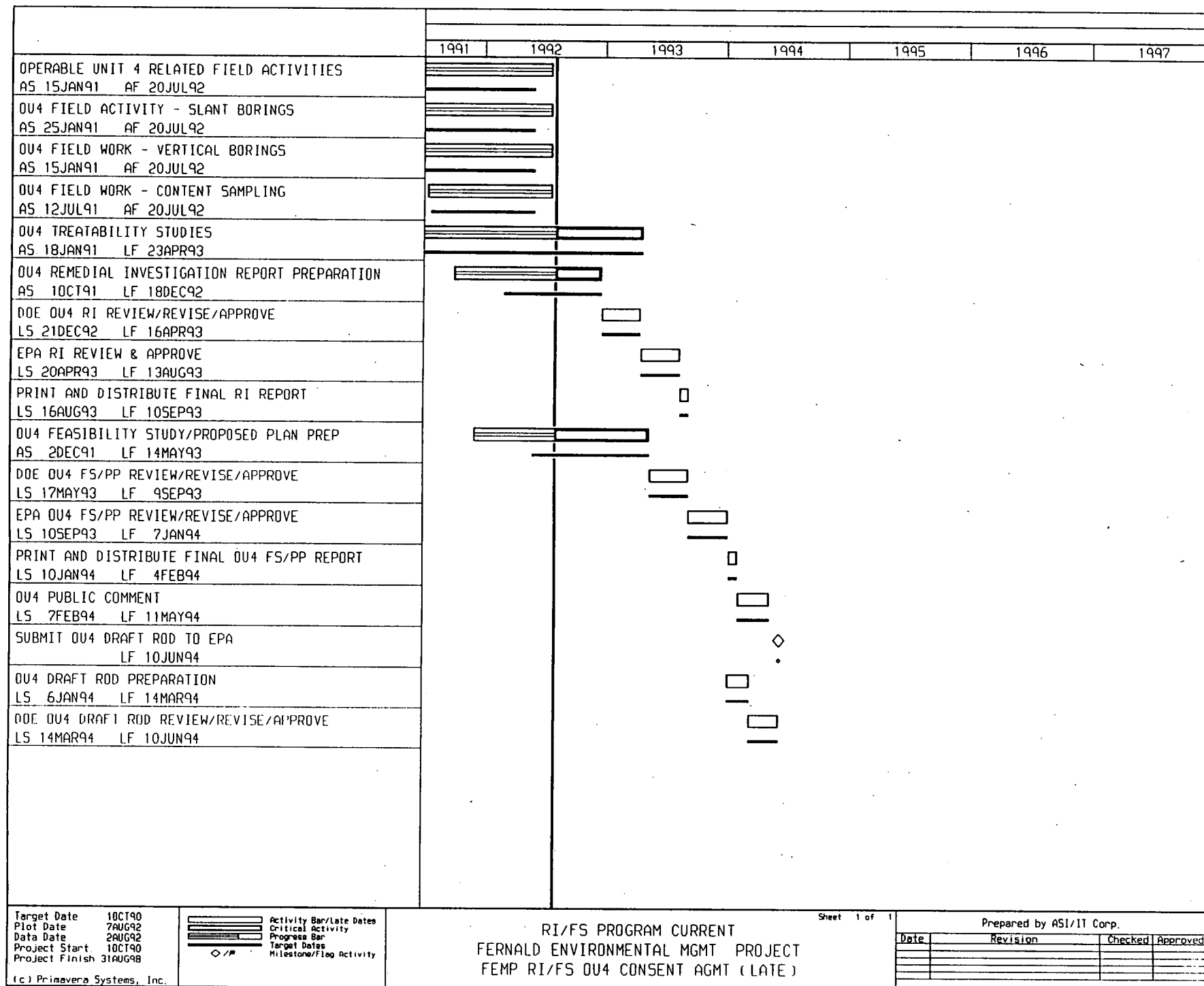
Chemical extraction treatability testing will continue. Stabilization of precipitated material will be initiated.

Vitrification of extractant solutions from chemical extraction testing will be completed.

Vitrification benchscale testing of the silo content material will continue for Silos 1, 2, and 3.

Evaluation of analytical results from advanced phase chemical extraction and stabilization tests will be initiated.

Complete the laboratory analysis of the radiological parameters for the samples retrieved from archived storage for the task identified in Section 4.1.2.



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5.0 Operable Unit 5

Operable Unit 5, as defined in the Amended Consent Agreement, includes groundwater, surface water, soil not included in the definitions of Operable Units 1 - 4, sediments, flora, and fauna.

5.1 Field Investigation

5.1.1 Paddy's Run South

Scope:

This investigation consists of the installation of twelve 2000-series wells along Paddy's Run, south of the FEMP, with the contingency to install twelve 3000-series wells, sample the wells monthly for one year, perform stream gauge and stream infiltration measurements, and perform surface water sampling.

Status:

Complete.

Issues/Corrective Actions:

None to report.

5.1.2 Facilities Testing

Scope:

This investigation consists of systematic and focused borings within the FEMP production area and additional suspect areas. Piezometers have been installed in those borings in which water was encountered.

Status:

Complete.

Issues/Corrective Actions:

None to report.

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5.1.3 31-Well Program

Scope:

This investigation consists of defining the limits of uranium plumes in the southern area of the FEMP.

Status:

Complete.

Issues/Corrective Actions:

None to report.

5.1.4 8-RCRA Well Program

Scope:

Eight wells were installed to meet RCRA and RI/FS requirements in and around the FEMP waste storage area.

Status:

Complete.

Issues/Corrective Actions:

None to report.

5.1.5 Miscellaneous Additional Wells Program

Scope:

Sixteen additional wells were installed to fill data gaps defined through recent sampling activities.

Status:

Complete.

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5.1.5 Miscellaneous Additional Wells Program (continued)

Issues/Corrective Actions:

DOE-FN is transmitting the conditionally approved comment responses received in the Work Plan to the U.S. EPA and the Ohio EPA.

5.1.6 Operable Unit 5 Work Plan Addenda (Formally Auger and Cable Tool Sampling Program)

Scope:

Soil and perched groundwater sampling will be conducted in the following areas under this program: the Plant 1 Pad, the Southeast Quadrant of the Production Area, the Fire Training Area, the KC-2 Warehouse Area, Scrap Metal Area and Electrical Substation, and the K-65 Slurry Line and Clearwell Line.

Status:

The addendum was transmitted to the U.S. EPA and the Ohio EPA in April 1992 for review and approval. Comments have been received from the Ohio EPA and U.S. EPA and are being reviewed and resolutions assessed.

Field characterization of the K-65 Slurry and Clearwell Line portion of the Work Plan continued. Currently, groundwater from the following 10 existing wells are being sampled for HSL volatiles, general water quality, and full radiological parameters:

The first round of groundwater sampling for HSL volatiles, general water quality, and full radiological parameters has been completed for 10 existing wells (1150, 1154, 1167, 1206, 1207, 1208, 1213, 1215, 1226, 1237)

Nine new wells are scheduled to be installed according to the current Work Plan for this task and their status is as follows:

- 1836 Installation completed.
- 1837 Installation completed. Well development complete.
- 1838 Installation completed.
- 1839 Installation completed. Well development complete.
- 1840
- 1841 Installation completed.

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5.1.6 Operable Unit 5 Work Plan Addenda (Continued)

- 1842 Installation completed. Well development complete.
- 1843 Installation completed. Well development and first round of groundwater sampling was completed.
- 1844 Installation completed. Well development and first round of groundwater sampling was completed.

Issues:

Installation of Monitoring Well 1840 was delayed due to location problems.

Corrective Actions:

Define a more suitable location for Well 1840.

5.1.7 Outfall Line Investigation

Scope:

The Work Plan Addendum defines the sampling and analysis required to investigate potential leakage from the outfall line as part of the Operable Unit 5 RI. The installation of Monitoring Well 2119 and subsequent sampling program is based upon data from water samples collected from Well 2067. If groundwater contamination has occurred due to a failure in the pipeline between Manhole 179 and 180, then a previously unidentified occurrence of contamination in groundwater may exist beyond the FEMP eastern boundary. Uranium contamination is present in groundwater samples at Well 2067. The installation of Well 2119 will determine if there is groundwater contamination associated with the pipeline failure between Manholes 179 and 180. If an off-FEMP plume is identified, then additional investigation may be required to determine the vertical and lateral extent of the plume.

Status:

The field investigation is currently scheduled to begin September 18, 1992.

Issues:

Landowner access approval has not been secured for the installation of Monitoring Well 2119.

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5.1.7 Outfall Line Investigation (Continued)

Corrective Actions:

Obtain access approval through expedient procedures.

5.1.8 Magnetic Anomalies Trenching

Scope:

This Work Plan Addendum defines the additional field activities required for the characterization of the northeast area of the FEMP for the Operable Unit 5 RI/FS. Geophysical surveys conducted in the northeast area during the fall of 1989 and in the area immediately to the south during the summer of 1990, identified magnetic anomalies north of the road and in the fire training area. Excavation is necessary to characterize the areas of the magnetic anomalies, the stratigraphy of the anomalous area, and perched groundwater which may be present. The additional activities are necessary to provide adequate information for assessment and potential remedial design.

Status:

Field investigation and earth work is scheduled to begin in August 1992.

Issues/Corrective Actions:

None to report.

5.2 Treatability Study

Scope:

The purpose of this study is to provide information to support the FS and subsequent remedy selection for Operable Unit 5. Specifically, the study will demonstrate the feasibility of soil washing as a remedial technology for cleaning soils in Operable Unit 5. The study incorporates a physical separation/chemical extraction process that initially involves the separation of a soil into different particle-size fractions. Reagent formulations in the washing solutions are used in the extraction of radionuclides and organic and inorganic compounds from these different-size fractions. The contaminants may be

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5.2 Treatability Study (continued)

separated from the wash stream into a concentrated residue for further treatment. The study consists of two phases: 1) Remedy Screening Stages 1 and 2 involving laboratory and bench-scale tests and 2) remedy selection using pilot-scale equipment. Soils from four different areas will be used in these investigations. These soils come from the following areas: incinerator area (ID-A), Plant 1 pad area (ID-B), maintenance building area (OU5-A), and either the fire training area or graphite furnace area (OU5-B).

Status:

DOE-FN received a letter from U.S. EPA dated June 22, 1992, agreeing with the revised comment responses to the work plan. These responses are being incorporated into the final Treatability Study Work Plan. The anticipated completion date for the revised work plan is early August 1992.

In July, remedy screening Stage I was completed on ID-A and ID-B soils. Evaluation of analyses from raw waste characterization of the fire training area has resulted in a recommendation to further sample the graphite furnace area as the primary candidate for OU5-B soil. Homogeneity tests on OU5-A soil were initiated. A scope of work was prepared for a subcontractor to prepare a pilot plant design and provide field technical assistance during pilot testing.

Issues:

Delay in procurement of the gas chromatographs for remedy screening analyses may impact holding time constraints for semivolatile organics.

Corrective Actions:

Based on analyses of untreated soil characterization data, it was determined that semivolatile analyses would not be required for soils currently undergoing Stage 1 testing.

5.3 Initial Screening of Alternatives

Scope:

The Initial Screening of Alternatives Report documents the initial activities of the FS. These activities include: developing remedial action objectives; developing general response actions; identifying volumes or areas of media to which response actions might be applied; identifying and screening technologies; identifying and evaluating technology process options; assembling selected representative process options into alternatives; and performing an initial screening of the alternatives.

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5.3 Initial Screening of Alternatives (continued)

Status:

The comments received from the DOE site office resulted in a decision to restructure the Initial Screening of Alternatives. The report has been revised and submitted to DOE-HQ; Delivery to DOE-FN was made on July 15, 1992.

Issues/Corrective Actions:

None to report.

OU5 INITIAL SCREENING OF ALTERNATIVES

PRIMARY

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Provides for initial evaluation against preselected criteria of candidate technologies assembled to remediate Operable Unit 5.	04/16/93 C	06/15/93 C	07/15/93 C

C = Consent Agreement Date

F = Forecast Complete

A = Actual

Document preparation is proceeding ahead of the Consent Agreement schedule.

5.4 Planned Activities for August 1992

The effort to compile data in support of the RI will begin.

Complete revisions to the Treatability Study Work Plan for submission to U.S. EPA and Ohio EPA.

Receive review comments from DOE-HQ and revise the Initial Screening of Alternatives Report for submission to U.S. EPA and Ohio EPA on September 15, 1992.

Continue to pursue completing a subcontract for treatability pilot plant design and field technical assistance.

Resolve the comments received from the regulators and incorporate resolutions into the Operable Unit 5 Work Plan Addenda through document revision. Upon resolution of the comments and the revision of the Work Plan, commence immediate mobilization of field crews to begin sampling activities associated with the KC-2 warehouse, fire training area and the southeast quadrant.

Continue with the second round of groundwater sampling of the 10 existing wells.

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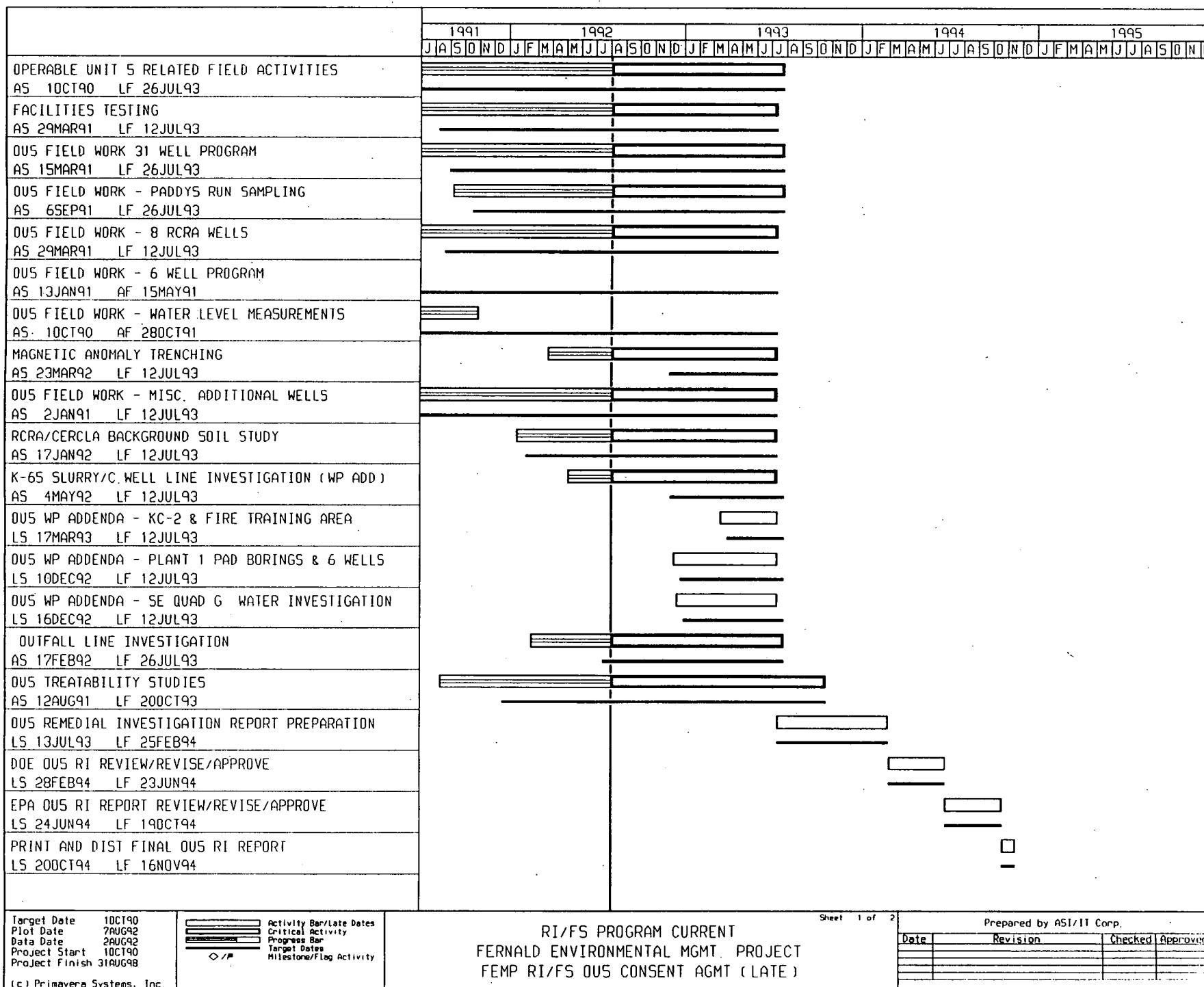
Period Ending July 31, 1992

5.4 Planned Activities for August 1992 (continued)

Complete the installation of Monitoring Well 1840 after a suitable location is determined. Complete the development and first round of groundwater sampling activities associated with the nine new monitoring wells for the K-65 slurry line and Clearwell line investigation.

Mobilize field crews and initiate subsequent field investigation activities if landowner access agreements are secured in August 1992.

Commence field activities associated with the field investigation for the magnetic anomalies trenching in the northeast area of the FEMP.



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Target Date	10CT90	
Plot Date	7AUG92	
Data Date	2AUG92	
Project Start	10CT90	
Project Finish	31AUG98	
(c) Primavera Systems, Inc.		

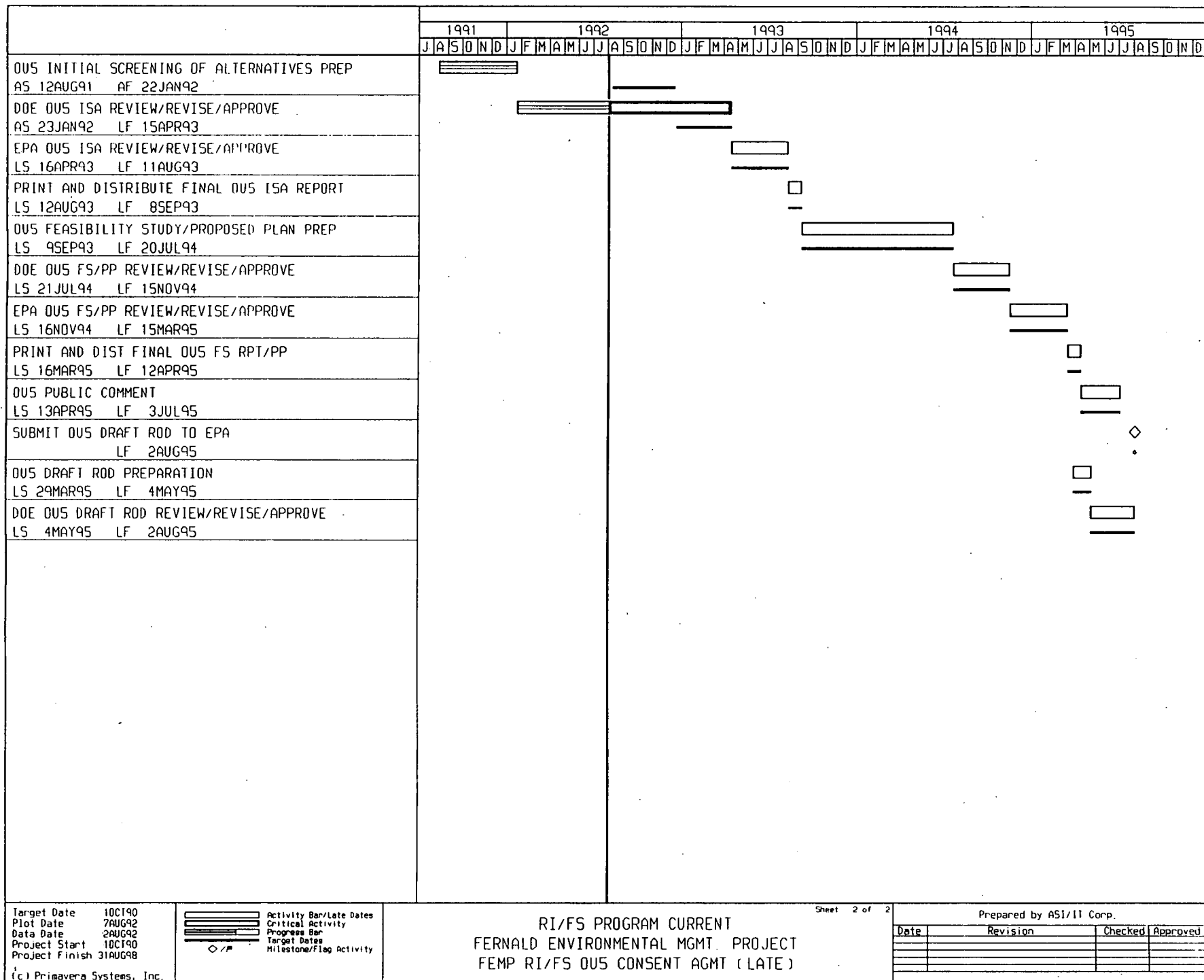
RI/FS PROGRAM CURRENT
 FERNALD ENVIRONMENTAL MGMT. PROJECT
 FEMP RI/FS OU5 CONSENT AGMT (LATE)

Sheet 1 of 2

Prepared by ASI/IT Corp.

Date	Revision	Checked	Approved

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6.0 Engineered Waste Management Facility

This program will evaluate the ability of the Engineered Waste Management Facility (EWMF) to manage the remedial waste generated by the operable units. The technical approach for the evaluation will be based on a program-specific sampling and analysis plan (SAP) and development of an EWMF Siting Report with comprehensive analysis. The report will perform a detailed analysis of the EWMF as an on-property waste disposal/storage technology option, per OSWER Directive 9355.3-01, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (EPA 1988).

6.1 Sampling and Analysis Plan

Scope:

The U.S. EPA approved the EWMF SAP as an addendum to the RI/FS Work Plan (March 1988), specifying a series of soil sample collection and analytical activities. Geotechnical, geochemical, radiological, and chemical soil samples were collected for analysis from 18 geotechnical borings (each approximately 30 feet deep) and from eight wells (five 1000-series and three 2000-series) installed under this program.

All surface soil samples received full radiological and full HSL analysis while, in general, samples collected at midstratum of the glacial overburden received total uranium and gamma spectral analysis only. The geochemical samples selected for batch sorption tests, x-ray diffraction analysis, and polarized light microscopy will be used to calculate retardation coefficients for an EWMF groundwater fate and transport model. The balance of the collected soil samples received geotechnical testing for preliminary engineering purposes. In addition, an on- and off-property National Environmental Policy Act (NEPA) ecological characterization program was conducted with biota sampling performed on trees at nine on-property locations.

The resultant SAP field and laboratory data will be used to support the evaluation of criteria for a detailed analysis of the EWMF as an on-property waste disposal/storage alternative per the methodology given in "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (EPA 1988).

Status:

The original field effort has been completed. During implementation, a number of geotechnical borings encountered perched groundwater. In addition, one well set (one 1000-series, one 2000-series) encountered bedrock. Due to these developments, arrangements have been made to install five additional geotechnical borings and to relocate the well pair. The five geotechnical borings were completed in March; the well pair relocation was completed in April.

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6.1 Sampling and Analysis Plan (Continued)

The off-site ecological walk-over survey, including a preliminary search for running buffalo clover, was conducted April 13 through April 16, 1992.

Chemical and radiological analysis of the EWMF soil samples were completed in May with soil samples for geochemical analysis submitted in early June.

Issues/Corrective Actions:

None to report.

6.2 EWMF General Siting Report

Scope:

The report will establish the feasibility of locating an EWMF at the FEMP by performing a detailed analysis of the EWMF as an on-property waste disposal/storage technology option per OSWER Directive 9355.3-01. The siting report will be divided into specific sections characterizing all pathways and associated risks. The report will be divided into the following sections: Geologic/Hydrogeologic, Geotechnical, Geochemical, Risk Assessment, RI/FS-Environmental Impact Statement, and Applicable or Relevant and Appropriate Requirements (ARARs).

Status:

The EWMF ARARs Revision 3 were submitted by the DOE for U.S. EPA and Ohio EPA review on December 3, 1991. Comments were received from the Ohio EPA on January 6, 1992 and the U.S. EPA on January 30, 1992. The ARARs were revised and transmitted to the EPAs on March 18, 1992 as Revision 4. On April 21, 1992, comments were received from Ohio EPA on Revision 4. DOE's responses to the comments will be incorporated into the draft Operable Unit 2 FS/PP/ROD for U.S. EPA submittal.

Issues/Corrective Actions:

None to report.

6.3 Planned Activities for August 1992

Completion of the geochemical and geotechnical analysis of the EWMF soil samples, originally scheduled for July, is now scheduled for August..

		1991						1992																															
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		WORK PLAN REVISIONS																																					
WORK PLAN ADDENDUM PREPARATION AS 17JUN91 AF 29JUL91																																							
DOE WORK PLAN REVIEW/REVISE/APPROVE AS 30JUL91 AF 24SEP91																																							
EPA WORK PLAN ADD. REVIEW/REVISE/APPROVE AS 11OCT91 AF 16JUN92																																							
		SITEWIDE CHARACTERIZATION																																					
SITEWIDE CHARACTERIZATION REPORT PREP AS 26JUL91 AF 1JUN92																																							
DOE REVIEW/REVISE/APPROVE SITE CHAR REPORT AS 16APR92 EF 3AUG92																																							
EPA REVIEW/REVISE/APPROVE SITE CHAR REPORT ES 4AUG92 EF 30SEP92																																							
Target Date 10CT90 Plot Date 7AUG92 Data Date 2AUG92 Project Start 10CT90 Project Finish 31AUG98		 Activity Bar/Late Dates Critical Activity Progress Bar Target Dates Milestone/Flag Activity		RI/FS PROGRAM CURRENT FERNALD ENVIRONMENTAL MGMT. PROJECT FEMP RI/FS PSC CONSENT AGMT (LATE)														Sheet 1 of 1 Prepared by ASI/IT Corp.																					
		<table border="1"> <thead> <tr> <th>Date</th> <th>Revision</th> <th>Checked</th> <th>Approved</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>		Date	Revision	Checked	Approved																																
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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

Period Ending July 31, 1992

7.0 Site-Wide Characterization Report

7.1 Risk Assessment Work Plan Addendum

Scope:

The Risk Assessment Work Plan Addendum provides a detailed scheme for development and completion of a baseline risk assessment for each operable unit, a preliminary site-wide baseline risk assessment, and a remedial action risk evaluation with each operable unit FS.

The Risk Assessment Work Plan Addendum presents the specific risk assessment methods to be followed in the RI/FS risk assessment tasks. It also establishes the scope of risk assessment work and documents the specific approach to be followed for determining whether estimated risks associated with selected remedial alternatives for the entire site are protective of human health and the environment. The addendum provides the methods, models, and parameters for development of the baseline risk assessment for each operable unit, the preliminary baseline risk assessment of the Site-Wide Characterization Report (SWCR), the remedial action risk evaluation, and the comprehensive response action risk evaluation for each operable unit FS.

Status:

The (Final) Risk Assessment Work Plan Addendum was transmitted to the U.S. EPA and Ohio EPA on June 19, 1992. The Risk Assessment Work Plan Addendum is considered final, however, to date, the U.S. EPA has not officially approved the document.

Issues/Corrective Actions:

None to report.

7.2 SWCR Report Preparation

Scope:

The SWCR is a one-time summary of all FEMP site data available as of December 1, 1991. It contains the preliminary baseline risk assessment, which estimates human health and ecological risk of the FEMP from a site-wide perspective. The SWCR also provides the initial list of the leading remedial alternatives for each operable unit for input into the FS cumulative response action risk evaluation.

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**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending July 31, 1992

7.2 SWCR Report Preparation (Continued)

Status:

Revisions are being completed in response to DOE comments.

SITE-WIDE CHARACTERIZATION REPORT

SECONDARY

SCOPE	SUBMIT TO EPA	RECEIVE FROM EPA	SUBMIT TO EPA FINAL
Provides a one-time summary of site characterization data available as of 12/1/91, the Preliminary Baseline Risk Assessment, and a list of the leading remedial alternatives.	08/05/92 C	08/18/92 C	12/18/92 C

C = Consent Agreement Date

F = Forecast Complete

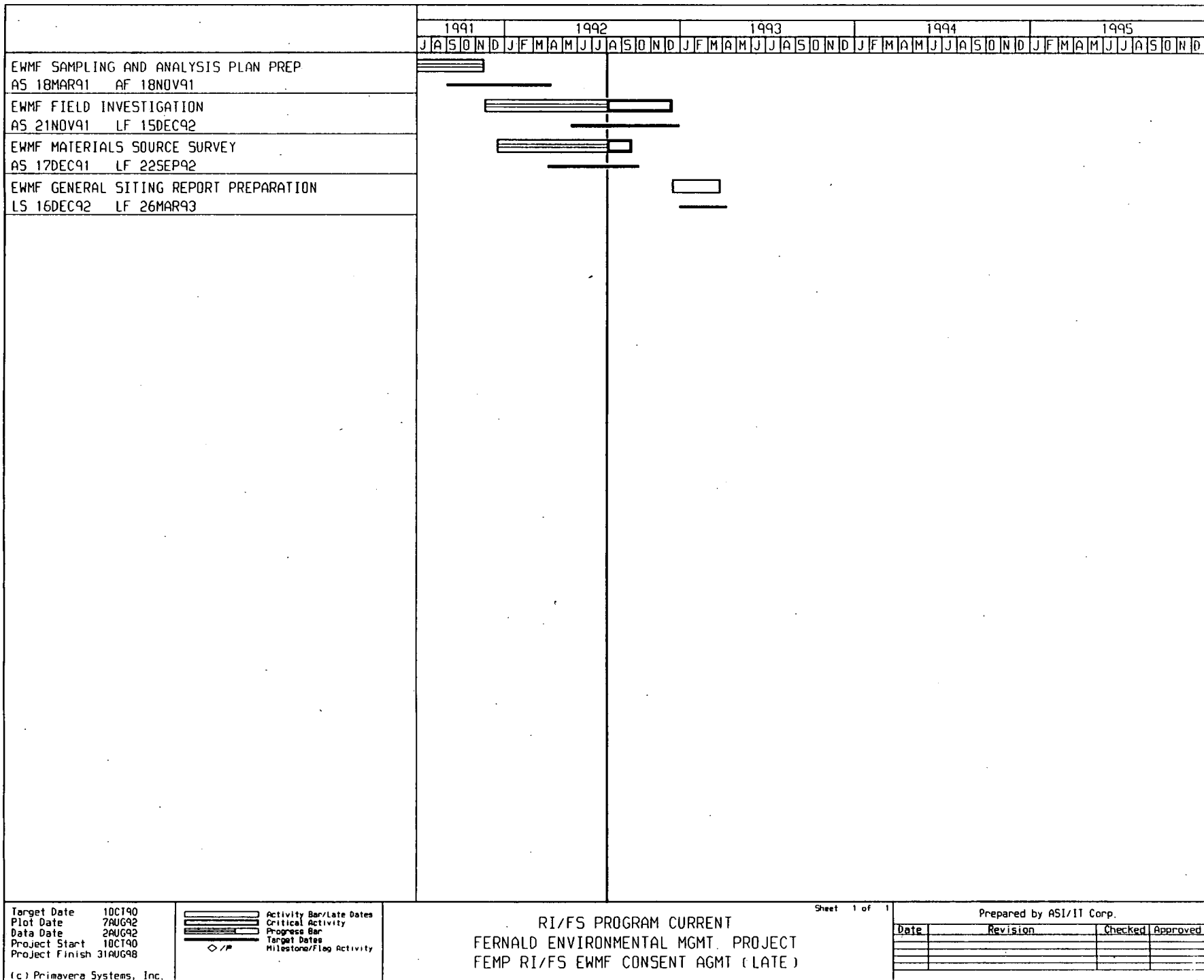
A = Actual

Issues/Corrective Actions:

None to report.

7.3 Planned Activities for August 1992

Submit to U.S EPA and Ohio EPA for review on August 5, 1992.



**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending July 31, 1992

8.0 Community Relations

8.1 Status

The 45-day public comment period on nine removal actions currently being conducted at the site was completed July 11. No written or oral comments from the public were received. An addendum to the Community Relations Plan for each removal action was prepared and is presently in review. The nine removal actions are:

- Contaminated Water Beneath FEMP Buildings
- Plant 1 Pad Continuing Release
- Removal of Waste Inventories and Thorium Management
- Active Fly Ash Pile Controls
- Safe Shutdown
- Plant 1 Ore Silos
- Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator
- Collect Uncontrolled Production Area Runoff - Northeast
- Improved Storage of Soil and Debris

A responsiveness summary will be issued. The responsiveness summary is an NCP requirement whether or not comments have been received. Since no comments were received, it will be a brief discussion of the situation.

DOE-FN has received comments from the U.S. Environmental Protection Agency on the revised Community Relations Plan -- Remedial Investigation/Feasibility Study and Removal Actions -- Volume III of the Work Plan. The comments are being incorporated.

On July 21, DOE held a Community Meeting at the Plantation in Harrison, Ohio. The meeting focused on cleanup activities at the FEMP. An availability session was held from 6:00 - 7:00 p.m. to answer individual questions on a one-to-one basis. The formal meeting began at 7:00 p.m. with updates from DOE personnel on "Safe Shutdown" and the cleanup status of the RI/FS and removal actions. U.S. EPA, Ohio EPA and FRESH made brief statements followed by a question-and-answer session. Approximately 35 area residents attended.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending July 31, 1992

8.0 Community Relations (Continued)

The Environmental Restoration and Waste Management Advisory Committee (EMAC) has been created by DOE to advise DOE on future cleanup plans and to give counsel on other Environmental Restoration and Waste Management (EM) projects assigned to it for review. The committee consists of 23 representatives selected from regions throughout the country and represents various organizations including environmental interest groups and state/local governments. Vicky Dastillung, a local Ross resident and a member of FRESH, is one of the representatives. After a kick-off meeting in Washington D.C., subsequent meetings will be held in areas close to major DOE EM sites. The EMAC may meet in the vicinity of Fernald in late September 1992.

8.2 Issues/Corrective Actions:

None to report.

8.3 Planned Activities for August 1992

A Public Participation workshop is scheduled for August 3 at the ERA building at 7:00 p.m.

A special public meeting to discuss the proposed public water supply has been scheduled for August 5 at Crosby Elementary School.

A Roundtable focusing on the Engineered Waste Management Facility has been scheduled for August 10 at the ERA building at 7:00 p.m.

Incorporate comments and issue a revised Community Relations Plan.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

PERIOD ENDING JULY 31, 1992

ENCLOSURE A

**WASTEWATER FLOWS AND RADIONUCLIDE
CONCENTRATIONS UNDER CA SECTION XXIII.B**

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending July 31, 1992

Introduction

The accompanying Effluent Radiation Reports provide, in accordance with the requirements of Section XXIII.B of the Consent Agreement As Amended under CERCLA Sections 120 and 106 (a), data on the daily wastewater flows, radionuclide concentrations, and loadings released to the Great Miami River and an estimate of runoff and radionuclide concentrations to Paddy's Run during July 1992.

Summary - July 1992

The total quantity of uranium discharged from the FEMP to the Great Miami River via Manhole 175 (Outfall 11000004001) was 35.28 kilograms. The average uranium concentration for the previous 12 months was 0.55 mg/l. This is 61.8 percent of the Derived Concentration Guide (DOE Order 5400.5) for ingested water.

There was no discharge from the Stormwater Retention Basin (Outfall 11000004002) to Paddy's Run via the Storm Sewer Outfall Ditch in July 1992. Based on 9.87 inches of rainfall in July 1992, the total quantity of uranium discharged to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 44.01 kilograms.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending July 31, 1992

Wastewater Flows and Radionuclide Concentrations

Facility: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398705
Cincinnati, Ohio 45239-8705

Location: 11000004001
001 Total Discharge
Manhole 175 (Effluent to the Great Miami River)

Month: July 1992

<u>Day</u>	<u>Flow (MGD)</u>	<u>Total Alpha (pCi/l)</u>	<u>Total Beta (pCi/l)</u>	<u>Total U (mg/l)</u>	<u>Total U (kgs)</u>	<u>Calculated Total U-238 (pCi/l) (1)</u>
1	0.398	180	99	0.40	0.60	135
2	0.419	266	243	0.34	0.54	115
3	0.322	176	203	0.24	0.29	81
4	0.328	342	180	0.58	0.72	196
5	0.323	225	153	0.34	0.42	115
6	0.380	288	117	0.48	0.69	162
7	1.055	171	90	0.22	0.88	74
8	1.145	90	27	0.16	0.69	54
9	0.830	171	54	0.36	1.13	122
10	0.390	104	113	0.16	0.24	54
11	0.398	131	54	0.24	0.36	81
12	1.190	230	81	0.34	1.53	115
13	1.380	131	72	0.22	1.15	74
14	1.304	167	54	0.20	0.99	68
15	1.366	297	68	0.48	2.48	162
16	1.340	221	126	0.40	2.03	135
17	1.465	252	99	0.34	1.88	115
18	1.101	270	81	0.40	1.67	135
19	1.082	311	90	0.36	1.47	122
20	1.263	261	59	0.46	2.20	155
21	1.261	108	68	0.26	1.24	88
22	1.233	248	32	0.28	1.31	95
23	1.300	144	59	0.24	1.18	81
24	1.379	225	72	0.26	1.36	88
25	1.090	266	54	0.28	1.15	95
26	0.459	270	153	0.36	0.63	122
27	1.104	216	59	0.48	2.00	162
28	0.558	329	72	0.32	0.68	108
29	0.549	297	95	0.36	0.75	122
30	0.616	329	113	0.34	0.79	115
31	<u>1.347</u>	275	162	0.44	<u>2.24</u>	149
TOTAL	28.375				35.28	

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

Period Ending July 31, 1992

Wastewater Flows and Radionuclide Concentrations

Facility: Fernald Environmental Management Project

Location: 001 Total Discharge

Month: July 1992

	Flow	Total Alpha	Total Beta	Total U	Total U	Calculated Total U-238
	(MGD)	(pCi/l)(2)	(pCi/l)(2)	(mg/l)(2)	(kgs)	(pCi/l)(1)(2)
Avg.	0.915	221	85	0.33	1.14	111
Max.	1.465	342	243	0.58	2.48	196
Min.	0.322	90	27	0.16	0.24	54

The average uranium concentration for the previous twelve months was 0.55 mg/l. This is 61.8 percent of the Derived Concentration Guide (DOE Order 5400.5) for ingested water.

- Comments: (1) The activity of this discharge has been and will continue to be reported as Uranium-238 (pCi/l) in accordance with the Ohio EPA format for reporting uranium. Since this does not account for the activity of the other uranium isotopes in the effluent, the total uranium data is also presented. The calculated total U-238 is based on a conversion factor of 337.84 pCi U-238/mg Total U applied to measure value of total uranium.
- (2) Average values presented are flow-weighted.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending July 31, 1992

Wastewater Flows and Radionuclide Concentrations

Facility: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398705
Cincinnati, Ohio 45239-8705

Location: 11000004002
002 Discharge (Overflow) to Storm Sewer Outfall Ditch
Stormwater Retention Basin Spillway (Effluent to Paddy's Run)

Month: July 1992

There was no discharge to Paddy's Run from the Stormwater Retention Basin.

Based on 9.78 inches of rainfall for the month, the uranium discharge to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 44.01 kgs.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE
AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

PERIOD ENDING JULY 31, 1992

ENCLOSURE B

**FFCA: INITIAL REMEDIAL MEASURES
AND OTHER OPEN ACTIONS**

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

Period Ending July 31, 1992

INTRODUCTION

Enclosure B describes actions undertaken at the FEMP during the period July 1 through July 31, 1992 that are not covered by the reporting requirements of the Consent Agreement As Amended under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 120 and 106(a).

WORK ASSIGNMENTS AND PROGRESS

Descriptions of ongoing work progress are presented in the following sections of this report. The status of ongoing work in support of the Federal Facility Compliance Agreement (FFCA) is summarized in Table 1 of Enclosure B. Completed work previously reported upon has been eliminated for the sake of brevity. In this portion of the report and in Table 1, descriptions of actions are presented in a format consistent with that of the FFCA.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA)

1. Initial Remedial Measures

Section C

K-65 Silo Project - Status information on the K-65 Silo project normally reported in this section is being provided under Operable Unit 4: Silos 1-4.

2. Remedial Investigation/Feasibility Study (RI/FS)

Status information on the Remedial Investigation/Feasibility Study (RI/FS) normally reported in this section is being provided separately in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending June 31, 1992

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND
LIABILITY ACT (CERCLA)**

3. Reports and Record Keeping

Section B

The RI/FS Monthly Technical Progress Report for June 1992 was transmitted to the U.S. EPA on July 20, 1992 as an integral part of the Consolidated Consent Agreement/Federal Facility Compliance Agreement (CA/FFCA) Monthly Progress Report in accordance with the requirements of Section X of the Consent Agreement As Amended.

CLEAN AIR ACT (CAA)

Section E

The Quarterly Particulate Emissions Report will now be incorporated into the Annual NESHAP Compliance Report.

RADIATION DISCHARGE INFORMATION

Section A

The twenty-first Quarterly Liquid Discharge Report for the period October through December 1991 was submitted to the U.S. EPA on February 20, 1992. This information will now be submitted on an annual basis.

REPORTING REQUIREMENTS

Section B

The Federal Facility Compliance Agreement Monthly Progress Report for June 30, 1992, was transmitted to the U.S. EPA on July 20, 1992 as Enclosure B of the Consolidated Consent Agreement/Federal Facility Compliance Agreement (CA/FFCA) Monthly Progress Report.

STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS

JULY 31, 1992

<u>ACTION</u>	<u>DESCRIPTION</u>	<u>COMPLETION TIME AFTER FFCA SIGNED</u>	<u>FY1992 STATUS</u>
CERCLA			
1.	INITIAL REMEDIAL MEASURES		
1.C	Implement radon control plan approved by the U.S. EPA.	-----	No longer applicable. Progress on actions to address radon emissions from the K-65 Silos are being reported separately under Section IX-Removal Actions of the Consent Agreement/FFCA Monthly Progress Report.
2.	REMEDIAL INVESTIGATION/FEASIBILITY STUDY		No action required.
2.A	RI/FS work is to be conducted in accordance with the U.S. EPA guidelines.	N/A	
2.B	--No Action Required--	-----	Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).
2.E	Amend and submit revised RI/FS Work Plan to U.S. EPA if deficiencies are found.		Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).
2.F	Implement tasks described in the approved RI/FS Work Plan		Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA sections 120 and 106(a).
3.	REPORTS AND RECORD KEEPING		
3.B	Submit monthly RI/FS progress reports.	monthly	The RI/FS Monthly Progress Report for June 1992 was transmitted to the U.S. EPA on July 20, 1992 (DOE-2155-92).
CLEAN AIR ACT			
B.4	Prepare annual progress report installation and replacement of emission control devices.	yearly	The Fourth Annual Progress Report on the installation and replacement of emission control devices was transmitted to the U.S. EPA on January 28, 1992 (DOE-982-92).

STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS

JULY 31, 1992

C.	Provide annual reports to the U.S. EPA per 40 CFR 61.94(c).	yearly	The Annual NESHAP Compliance Report for CY1990 was transmitted to the U.S. EPA on June 25, 1992 (DOE-1912-92).
D.1	Provide U.S. EPA with yearly stack-testing schedule.	yearly	The 1989 stack testing schedule was transmitted to the U.S. EPA on June 16, 1989. A letter (DOE-1615-89) was transmitted to the U.S. EPA on September 15, 1989, indicating that, due to the uncertainty concerning resumption of production at the FEMP, the 1989 FFCA Stack Testing Program was being deferred. In August 1991, the DOE confirmed that no further production would take place at the facility, and renamed the facility the FEMP. Some stack operations are expected when waste processing operations are resumed. The U.S. EPA will be provided with notification of future stack testing dates when operating schedules are formulated.
D.2	Provide U.S. EPA with stack-test results for stacks tested that year.	45 days	Because the FEMP has been out of production since mid-1989, there was no opportunity to perform stack testing. The DOE, in August 1991, confirmed that no future production will take place at the FEMP. Some stack operations are expected when waste processing operations are resumed. Stack test results will be provided following the completion of testing on stacks which are returned to operation.
E.1	Maintain records of monthly particulate matter emissions.	-----	Ongoing.
E.2	Provide quarterly reports to U.S. EPA on these emissions.	-----	The Quarterly Particulate Emissions Report will now be incorporated into the Annual NESHAP Compliance Report.
RCRA			
A.1	Conduct a hazardous waste determination on all waste streams.	30 days	Pursuant to the proposed Amended Consent Decree, a RCRA waste evaluation will be conducted on all site materials by 10/92.

STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS

JULY 31, 1992

A.2	Commence a hazardous waste analysis program for materials in the landfill and going to the incinerator.	30 days	Complete. Operation of these units was discontinued and data on the waste which had gone to them was provided in a 30-day FFCA deliverable on August 17, 1986. However, further review of both the waste streams and the potential of the units to be hazardous waste management units are being evaluated as actions required by the proposed Amended Consent Decree. Final results are due October 30, 1992.
A.5	Update the facility closure plan to reflect the year the facility expects to begin closure.	30 days	The Facility closure date is dependent upon closure schedules for individual TSD units as presented most recently in Section I of the RCRA Part B Permit Application transmitted to the Ohio EPA and the U.S. EPA on October 30, 1991 (DOE-211-92). Facility closure will be completed on a date the last TSD unit is closed.

RADIATION DISCHARGE INFORMATION

A.3	Report to U.S. EPA, Ohio EPA and Ohio Department of Health the results of the continuous liquid discharge samples.	yearly	The twenty-first Quarterly Discharge Report for the period October through December 1991 was transmitted to the U.S. EPA on February 20, 1992 (DOE-941-92). This information will now be reported on an annual basis.
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REPORTING REQUIREMENTS

B.	Issue monthly progress report of actions taken to ensure compliance with FFCA requirements.	monthly	June's FFCA Monthly Progress Report was transmitted to the U.S. EPA on July 20, 1992 (DOE-2155-92).
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**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

PERIOD ENDING JULY 31, 1992

ENCLOSURE C

**FEDERAL FACILITY AGREEMENT:
CONTROL AND ABATEMENT OF RADON-222 EMISSIONS**

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending July 31, 1992

Introduction

The Federal Facility Agreement (FFA) between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (U.S. EPA), signed November 19, 1991, requires that a monthly report be submitted to the U.S. EPA regarding all steps undertaken in the preceding month to implement Part V of the agreement and that all data generated as a result of those actions be submitted.

Enclosure C fulfills those requirements by describing steps taken at the FEMP during the period July 1 through July 31, 1992, to implement Part V, Radon-222 Control and Abatement Plan, paragraphs 19-33 of the FFA.

After four months of data collection for the applicable parameters, preparation is now underway to evaluate the data for use in the Transport Release Models.

Work Assignments and Progress

In this section of Enclosure C, action descriptions and work progress are presented in a format consistent with that of the FFA. Immediately following this section are the K-65 Silos Report and the Selected Radon Data Report. Reporting this data is also a requirement included in the U.S. EPA approved Silos 1 and 2 Removal Action Work Plan (Removal Action No. 4).

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

Period Ending July 31, 1992

<u>FFA Part, Paragraph(s)</u>	<u>Description of Commitment</u>	<u>FFA Due Date</u>	<u>Status of Commitment</u>
Part V, 19 & 21	Implement the K-65 Silos 1 and 2 Removal Action in accordance with the approved Silos 1 and 2 Removal Action Work Plan.	12/1/91	Completed. Installation of the bentonite completed 11/28/91.
Part V, 20	Reduce radon-222 to a level As-Low-As Reasonably-Achievable (ALARA) with the goal as specified in the Silos 1 and 2 Removal Action Work Plan.	5/22/92	Completed. The Bentonite Effectiveness Environmental Monitoring Report was transmitted to the U.S. EPA on 5/22/92.
Part V, 22	Submit proposed methodology for estimating radon-222 concentration reductions resulting from completion of the Silos 1 and 2 Removal Action.	Within 60 days of completing removal action; 1/27/92.	Completed. The Bentonite Effectiveness Environmental Monitoring Plan was resubmitted to the U.S. EPA for comment and approval on 3/13/92. EPA approval was received on 4/24/92.
Part V, 23	Evaluate performance of the removal action and determine whether or not additional actions are needed prior to final remediation.	None specified.	Methodology for estimating radon-222 concentration reduction submitted to U.S. EPA per paragraph 20 of Part V. The first Bentonite Effectiveness Environmental Monitoring Report was issued to the U.S. EPA on 5/22/92.
Part V, 24, 25, and 33	Demonstrate compliance with NESHAP Subpart Q at the completion of final remediation using a methodology approved by the U.S. EPA. Applicable to: Silos 1, 2, and 3; Waste Pits 1, 2, 3, 4, and 5 and the Clearwell; and any newly discovered radon-222 emission sources.	None specified.	No information to report for July 1992.

<u>FFA Part, Paragraph(s)</u>	<u>Description of Commitment</u>	<u>FFA Due Date</u>	<u>Status of Commitment</u>
Part V, 26	Directly measure radon-222 flux from Waste Pits 1, 2, 3, 4, and 5 and the Clearwell in the RI/FS under the CERCLA Consent Agreement.	None specified.	No information to report for July 1992.
Part V, 26	Include direct measurement data from Waste Pits 1, 2, 3, 4, and 5 and the Clearwell in the RI/FS under the CERCLA Consent Agreement.	None specified.	No information to report for July 1992.
Part V, 27	Estimate Radon-222 emissions from Silo 3 based upon characterization data; include the estimated radon-222 emission data from Silo 3 in the RI/FS that includes Silo 3 under the CERCLA Consent Agreement.	None specified.	No information to report for July 1992.
Part V, 28	Submit documentation or estimates of current radon-222 emissions from existing but newly discovered sources that contain Radium-226 in sufficient concentrations to emit radon-222 in excess of NESHAP Subpart Q prior to final remediation.	Within 30 days of discovery.	No new sources identified.
Part V, 30	Submit methodology for direct measurement or other appropriate means of characterization of the relevant emissions pursuant to paragraph 29 of the FFA.	Within 45 days of the U.S. EPA response pursuant to paragraph 29.	None required.

<u>FFA Part, Paragraph(s)</u>	<u>Description of Commitment</u>	<u>FFA Due Date</u>	<u>Status of Commitment</u>
Part V, 31	Submit results of measurements pursuant to paragraph 30.	Within 30 days of U.S. EPA approval of characterization method.	None required.
Part VI, 31	Submit monthly report on steps undertaken to implement Part V of the FFA in the preceding month.	20th day of succeeding month.	The seventh progress report being submitted herewith as an integral part of the CERCLA Consent Agreement Monthly Progress Report.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT/FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

Period Ending July 31, 1992

Data Reporting Requirements: RA No. 4: Silos 1 and 2

As defined in the Silos 1 and 2 Removal Action Work Plan and the Federal Facility Agreement, data associated with monitoring the effectiveness of the bentonite installation are included in the following tables: the K-65 Silos Report and the Selected Radon Data Report.

The K-65 Silos Report includes or will include data on the following parameters:

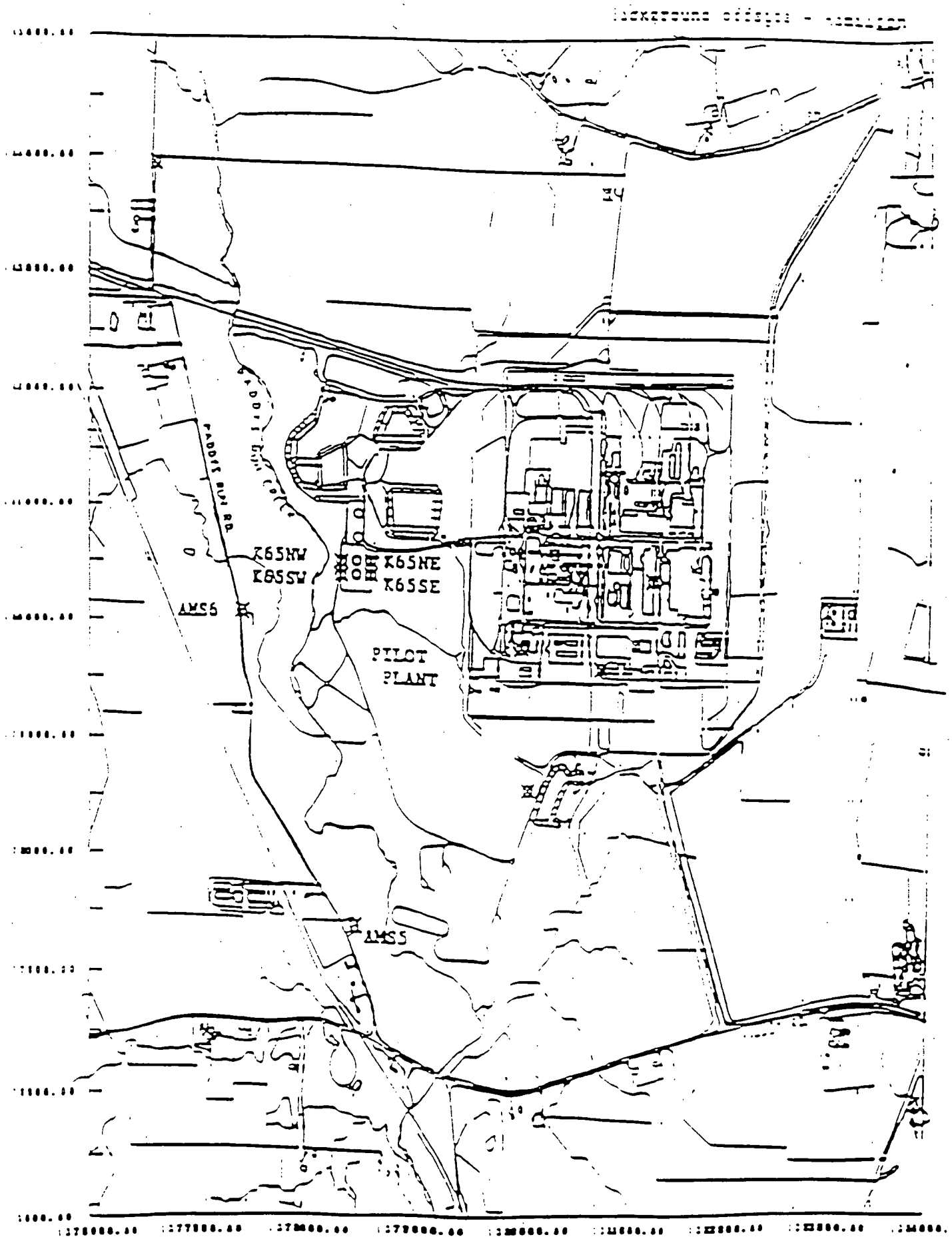
- Ambient temperature and pressure near the silos.
- Silos 1 and 2 headspace temperature.
- Silos 1 and 2 differential pressure.
- Silos 1 and 2 radon headspace concentration.
- Silos 1 and 2 headspace humidity

The silo radon headspace data submitted has been collected manually since the completion of the bentonite installation. An automated data logging system is currently being calibrated. After calibration and final system check-out of the data logging system is completed, the data for Silos 1 and 2 and the perimeter pylons will be automatically recorded. This system was operational during the last two weeks of July.

The Selected Radon Data Report includes or will include radon data from the following locations:

- Air monitoring station number 5 (AMS-5)
- Air monitoring station number 6 (AMS-6)
- Pilot Plant
- Background data
- K-65 Monitoring Data (K-65 NW, K-65 SW, K-65 NE, K-65 SE). Figure C-6, immediately following, identifies the sampling locations.

REAL-TIME RADON MONITORING LOCATION 3656



CONSOLIDATE CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/
FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

3656

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

K-65 SILO REPORT

LOCATION: Silo # 1

DATE: JULY 1992

Day	Ambient Temp Deg. F	Pres In. Hg.	Temperature Head Space Deg. F	Inter. Hum. %	Diff. Pres In. HG	Head Space Radon (pCi/l)
1	74.9	29.3	61.2	98.4	0.0	261,700
2	78.3	29.3	61.6	98.3	0.1	191,000
3	70.9	29.3	62.1	98.5	0.0	**
4	69.5	29.5	61.8	98.9	0.0	**
5	69.4	29.3	62.1	98.6	0.1	**
6	68.7	29.4	62.1	98.5	0.4	**
7	63.8	29.5	61.9	98.8	0.0	**
8	75.2	29.4	61.8	98.6	-0.4	**
9	79.5	29.4	62.5	97.8	0.0	242,200
10	76.3	29.4	63.1	97.7	0.1	**
11	75.4	29.4	63.2	98.3	0.0	**
12	*	*	*	*	*	**
13	85.6	29.4	64.2	*	0.0	**
14	76.6	29.6	64.5	97.6	(5.7)	224,880
15	71.4	30.3	64.6	97.7	(4.9)	**
16	71.2	30.3	64.3	98.2	(2.2)	[73670]
17	71.2	30.3	64.3	97.8	-0.1	[20393]
18	72.3	30.3	64.2	98.2	0.0	[29991]
19	72.4	30.4	64.3	98.1	0.0	[90687]
20	73.6	30.3	64.6	98.1	0.0	**
21	67.7	30.4	64.5	98.4	0.0	[11424]
22	71.9	30.4	64.1	98.5	0.0	[62467]
23	70.8	30.3	64.3	98.1	0.0	[24974]
24	70.2	30.4	64.1	98.0	-0.1	[53302]
25	*	*	*	*	*	**
26	*	*	*	*	*	**
27	*	*	*	*	*	**
28	78.1	30.3	64.9	97.4	0.0	[71768]
29	70.5	30.3	65.0	98.1	0.0	[72297]
30	73.2	30.0	65.1	97.7	0.0	[98185]
31	65.5	29.5	65.1	98.1	0.0	[22277]
ARITHMETIC						
MEAN	72.7	29.8	63.5	98.2	0.0	96,951
MAXIMUM						
	85.6	30.4	65.1	98.9	0.4	261,700
MINIMUM						
	63.8	29.3	61.2	97.4	-0.4	11,424
MEDIAN						
	71.9	29.6	64.2	98.1	0.0	72,033

Note: * - Data not available

() - Invalid data. System under repair.

Radon Data

** - Data not collected

[] - Data obtained from data logger system using a radon monitor.

All other Radon headspace data represents data collected by grab sampling methods.

CONSOLIDATE CONSENT AGREEMENT/FEDERAL FACILITY COMPLIANCE AGREEMENT/
FEDERAL FACILITY AGREEMENT MONTHLY PROGRESS REPORT

3656

FACILITY: Fernald Environmental Management Project
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

K-65 SILO REPORT

LOCATION: Silo # 2

DATE: JULY 1992

Day	Ambient Temp Deg. F	Pres In. Hg.	Temperature Head Space Deg. F	Inter. Hum. %	Diff. Pres In. HG	Head Space Radon (pCi/l)
1	74.9	29.3	60.7	98.2	-0.3	263,200
2	78.3	29.3	61.1	97.8	-0.1	249,900
3	70.9	29.3	61.5	98.4	-0.1	**
4	69.5	29.5	61.3	98.5	-0.1	**
5	69.4	29.3	61.4	98.6	-0.1	**
6	68.7	29.4	61.5	98.7	0.3	**
7	63.8	29.5	61.3	99.1	-0.1	**
8	75.2	29.4	61.1	98.8	-0.6	**
9	79.5	29.4	61.9	97.6	-0.1	262,400
10	76.3	29.4	62.5	97.6	0.0	**
11	75.4	29.4	62.6	98.3	0.3	**
12	*	*	*	*	*	**
13	85.6	29.4	63.6	*	-0.1	**
14	76.6	29.6	63.8	96.7	(2.2)	133,410
15	71.4	30.3	63.9	97.7	-0.3	**
16	71.2	30.3	63.6	98.0	0.7	**
17	71.2	30.3	63.7	97.8	-0.1	**
18	72.3	30.3	63.5	98.1	0.0	**
19	72.4	30.4	63.6	98.0	0.0	**
20	73.6	30.3	63.8	97.6	0.0	**
21	67.7	30.4	63.7	98.0	0.0	329,300
22	71.9	30.4	63.4	98.1	0.0	[145360]
23	70.8	30.3	63.5	97.8	0.0	[204887]
24	70.2	30.4	63.4	98.0	-0.1	[222391]
25	*	*	*	*	*	**
26	*	*	*	*	*	**
27	*	*	*	*	*	**
28	78.1	30.3	64.1	97.1	0.0	281,090
29	70.5	30.3	64.1	97.8	0.0	780
30	73.2	30.0	64.3	97.3	0.1	**
31	65.5	29.5	64.2	98.0	0.1	**
ARITHMETIC						
MEAN	72.7	29.8	62.8	98.0	0.0	209,272
MAXIMUM						
	85.6	30.4	64.3	99.1	0.7	329,300
MINIMUM						
	63.8	29.3	60.7	96.7	-0.6	780
MEDIAN						
	71.9	29.6	63.5	98.0	0.0	236,146

Note: * - Data not available

() - Invalid data. System under repair.

Radon Data

** - Data not collected

[] - Data obtained from data logger system using a radon monitor.

All other Radon headspace data represents data collected by grab sampling methods.

SELECTED RADON DATA REPORT

3656

FACILITY: Fernald Environmental Management Report
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

LOCATION: Selected Sampling Locations

DATE: JULY, 1992

Date	K-65 NW (pCi/L)	K-65 SW (pCi/L)	K-65 NE (pCi/L)	K-65 SE (pCi/L)
07/01/92	1.4	1.4	0.6	0.9
07/02/92	1.4	1.6	0.4	1.1
07/03/92	0.7	0.7	0.7	0.4
07/04/92	1.1	1.1	1.5	0.7
07/05/92	1.2	1.4	2.6	1.6
07/06/92	0.8	1.0	1.0	0.6
07/07/92	1.4	1.4	1.2	1.3
07/08/92	0.9	1.2	0.9	0.8
07/09/92	0.9	1.1	0.6	0.6
07/10/92	0.8	0.9	0.6	0.8
07/11/92	0.8	0.9	0.3	0.5
07/12/92	0.8	0.8	0.5	0.4
07/13/92	0.6	0.7	0.3	0.3
07/14/92	0.6	0.9	0.6	0.4
07/15/92	0.7	0.7	0.7	0.2
07/16/92	0.8	0.9	0.9	0.0
07/17/92	0.6	0.7	0.8	0.0
07/18/92	0.8	1.1	1.3	0.0
07/19/92	1.2	1.2	1.4	0.0
07/20/92	1.1	1.3	1.9	0.4
07/21/92	0.8	1.0	0.7	0.4
07/22/92	0.8	1.1	0.6	0.3
07/23/92	1.1	1.2	1.7	0.7
07/24/92	0.9	1.0	1.6	0.7
07/25/92	1.1	1.1	1.8	0.9
07/26/92	1.0	1.1	1.6	0.7
07/27/92	0.9	1.0	1.4	0.9
07/28/92	0.9	1.0	1.6	0.8
07/29/92	1.1	1.3	2.8	1.3
07/30/92	1.0	1.0	1.2	0.7
07/31/92	0.6	0.7	0.8	0.3
AVERAGE	0.9	1.0	1.1	0.6
MAXIMUM	1.4	1.6	2.8	1.6
MINIMUM	0.6	0.7	0.3	0.0
MEDIAN	0.9	1.0	0.9	0.6
Std. Dev	0.2	0.2	0.6	0.4

SELECTED RADON DATA REPORT

3656

FACILITY: Fernald Environmental Management Report
U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton

LOCATION: Selected Sampling Locations

DATE: JULY, 1992

Date	AMS 5 (pCi/L)	AMS 6 (pCi/L)	PILOT PLANT (pCi/L)	BKGRD (pCi/L)
07/01/92	1.0	0.7	0.8	0.7
07/02/92	1.1	0.9	1.1	0.7
07/03/92	0.3	0.2	0.0	0.4
07/04/92	0.7	0.6	0.0	0.5
07/05/92	0.8	0.8	0.0	0.7
07/06/92	0.5	0.4	0.5	0.4
07/07/92	1.0	0.9	1.0	0.8
07/08/92	0.5	0.4	0.7	0.5
07/09/92	0.4	0.4	0.6	0.5
07/10/92	0.4	0.4	0.6	0.5
07/11/92	0.4	0.4	0.6	0.5
07/12/92	0.4	0.3	0.5	0.4
07/13/92	0.3	0.3	0.5	0.4
07/14/92	0.4	0.3	0.6	0.5
07/15/92	0.3	0.3	0.5	0.4
07/16/92	0.5	(1.5)*	0.6	0.5
07/17/92	0.3	(2.4)*	0.6	0.4
07/18/92	0.5	(1.9)*	0.6	0.5
07/19/92	0.6	(13.7)*	0.7	0.6
07/20/92	0.7	(15.0)*	0.7	0.6
07/21/92	0.4	0.3	0.5	0.4
07/22/92	0.4	0.4	0.5	0.4
07/23/92	0.6	0.5	0.6	0.6
07/24/92	0.4	0.4	0.6	0.5
07/25/92	0.6	0.7	0.7	0.6
07/26/92	0.4	0.4	0.5	0.5
07/27/92	0.4	0.5	0.5	0.5
07/28/92	0.6	0.5	0.6	0.5
07/29/92	0.7	0.7	0.9	0.6
07/30/92	**	0.4	0.6	0.5
07/31/92	**	0.3	0.5	0.4
AVERAGE	0.5	0.5	0.6	0.5
MAXIMUM	1.1	0.9	1.1	0.8
MINIMUM	0.1	0.1	0.0	0.4
MEDIAN	0.5	0.4	0.6	0.5
Std. Dev	0.2	0.3	0.2	0.1

* data was considered to be invalid and therefore censored based on:
- K65 silo data for the same period was significantly lower
- data returned to normal after reset during routine weekly check

** Unit Malfunction

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT FEDERAL FACILITY AGREEMENT MONTHLY
PROGRESS REPORT**

PERIOD ENDING JULY 31, 1992

ENCLOSURE D

DRILLING/BORING LOGS

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: 602.04.19	PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2821	COORDINATES:	DATE: 6/24/92
ELEVATION:	GWL: Depth 10.30 Date/Time 6/24/92	DATE STARTED: 6/24/92
ENGINEER/GEOLOGIST: D.O'Brien	Depth 10.82 Date/Time 7/2/92	DATE COMPLETED: 7/2/92
DRILLING METHODS: Cable Tool		PAGE 1 OF 15

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY IN	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%)	REMARKS
1430	65105	4	(1)	V. STIFF. 2.5Y (10) LIGHT OLIVE brown, silty clay. No plasticity dry	cl	228	H _{Nu} = 0 ppm R ₈ = 300 ppm
1435	NA	7	(1)	No Recovery	NA	NA	
1440	NA	10	(1)	No Recovery	NA	NA	
1435	65106		(1)	V. STIFF. 2.5Y (13) LIGHT OLIVE brown, silty clay. No plasticity dry	cl	30	H _{Nu} = 0 ppm R ₈ = 300 ppm
1440	NA		(1)	No Recovery	NA	NA	
1445	NA		(1)	No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Driller: Jim Saccardi
 CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

Ex: H_{Nu} = 0 ppm
 R₈ = 60-300 ppm

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: 1602 04.19		PROJECT NAME: 4- RCRA Wall Program	
BORING NUMBER: 2821		COORDINATES:	DATE: 1/24/92
ELEVATION:		GWL: Depth Date/Time	DATE STARTED: 1/24/92
ENGINEER/GEOLOGIST: D. O'Brien		Depth Date/Time	DATE COMPLETED: 7/2/92
DRILLING METHODS: Cable Tool		PAGE 2	OF 15

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY 1.0 IN	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
14.40	US107	10	6	Hard 2.5y (1/6) Olive yellow silty clay, no plasticity dry	CI	>4.5	HNU = 0.0 CFM BS = 100 CFM
14.40	US108	15	6	SAA	CI	>4.5	
14.40	NA	25	0	No Recovery	NA	NA	
14.40	US109	32	6	Hard 2.5y (1/6) Olive yellow silty clay, no plasticity, dry	CI	>4.5	HNU = 0.0 CFM BS = 100 CFM
14.40	US110	47	6	SAA	NA	>4.5	
14.40	NA	50	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
 Driller: Jim Saccari
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p 1

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: 602.04.19		PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2821		COORDINATES:	DATE: 6/24/92
ELEVATION:		GWL: Depth Date/Time	DATE STARTED: 6/24/92
ENGINEER/GEOLOGIST: D.O'Brien		Depth Date/Time	DATE COMPLETED: 7/2/92
DRILLING METHODS: Cable Tool			PAGE 3 OF 15

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER FOOT	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY % (TPI)	REMARKS
6	1455 68111	11	60	Hard 2.5 (1/4) light yellowish brown silty clay with gravel no plasticity, dry	cl	34.5	HNu = 0 ppm Bx = 1000 ppm
7	1455 68112	17	60	SAA	cl	4.0	
7	NA	22	0	No Recovery	NA	NA	
8	1455 68113	16	60	V Stiff 2.5 (1/4) light yellowish brown silty clay with gravel no plasticity, slightly moist	cl	30	HNu = 0 ppm Bx = 300 ppm
8	NA	22	0	No Recovery	NA	NA	
	1455 68114	24	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
 Driver: Jim Saccani
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: 1602.04.19	PROJECT NAME: 4- RCRA Well Program		
BORING NUMBER: 2821	COORDINATES:		DATE: 11/24/92
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 11/24/92
ENGINEER/GEOLOGIST: D.O'Brien	Depth	Date/Time	DATE COMPLETED: 7/2/92
DRILLING METHODS: Cable Tool			PAGE 4 OF 15

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER FOOT	RECOVERY %	DESCRIPTION	UNCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
	1535 1534	15	6	Hard (2.54) 4/3 Olive brown silty clay w/ gravel low plasticity, slightly moist	CI	4.0	HNU = 0 ppm B8 = 30 ppm
	1535 1534			SAA			
	1535 1534	16	6		CI	4.0	
10	1535 1534			SAA			
	1535 1534	18	4		CI	4.0	
	1535 1534						
	1535 1534	11	6	V. Stiff (2.54) 4/3 Olive brown silty clay w/ gravel, low plasticity, slightly moist	CI	3.5	HNU = 0 ppm B8 = 600 ppm
11	1535 1534			Top 4" SAA	CI	3.5	
	1535 1534	16	6	Bottom 2" V. Stiff (2.54) 5/1 Gray silty clay, low plasticity, slightly moist	CI	3.25	
	1535 1534			No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Driller: Jim Saccani
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: 602-04-19		PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2821		COORDINATES:	DATE: 6/25/92
ELEVATION:		GWL: Depth Date/Time	DATE STARTED: 6/24/92
ENGINEER/GEOLOGIST: D.O'Brien		Depth Date/Time	DATE COMPLETED: 7/2/92
DRILLING METHODS: Cable Tool			PAGE 5 OF 15

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER FOOT	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
12	0825 65119	7	6	V. Stiff. 2.5Y (4/3) Clay brown silty clay with gravel. low plasticity, slightly moist	CI	3.25	H ₂ O = 0 ppm B ₂ = 30 cpm
	0825 65120	15	5	SAA	CI	3.0	
	NA	21	0	No Recovery	NA	NA	
14	0830 65121	7	6	V. Stiff. 2.5Y (4/4) Light yellowish brown silty clay with gravel low plasticity, slightly moist	CI	3.75	H ₂ O = 0 ppm B ₂ = 60 cpm
	0830 65122	17	3	SAA	CI	2.5	
	NA	20	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Driller: Jim Saccani
Craig Coulter

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

3656

PROJECT NUMBER. 102 CH. 19	PROJECT NAME. 4-RCRA Well Program	DATE 4/25/92	COORDINATES:	ELEVATION:	BORING NUMBER: 2521	ENGINEER/GEOLOGIST. D.O. Brinn	Drill. Depth	Date/Time	DATE STARTED: 4/24/92	DATE COMPLETED: 7/6/92	PAGE 6 OF 13
DRILLING METHODS. Cable Tool											

DEPTH ft +	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1 INCH	RECOVERY %	DESCRIPTION	UNSC SYMBOL	MEASURED CONSISTENCY (pcf)	REMARKS
15.40	BT	10		Silt 2.5 (B/F) Gray, silty clay, high plasticity, slight moist	1.25	HNC = 0 pfm BS = 20 cpm	
16.00	NA	7		No Recovery	NA		
16.00	NA	10		No Recovery	NA		
16.30	0930	3		M Silt 2.5 (B/F) Gray argillaceous clay, high plasticity (slightly moist)	1.75	HNC = 0 pfm BS = 10 cpm	
17.00	NA	3		No Recovery	NA		
17.00	NA	3		No Recovery	NA		

SAA - SAME AS ABOVE
NA - NOT APPLICABLE

~~Boonsylvanian Drilling~~

FD-203

7/13/2007

~~SECRET~~

Conclusion:

NOTES:

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: 602 04.19		PROJECT NAME: 4 - RCRA Well Program	
BORING NUMBER: 2821		COORDINATES:	DATE: 11/24/92
ELEVATION:		GWL: Depth Date/Time	DATE STARTED: 11/24/92
ENGINEER/GEOLOGIST: D.O'Brien		Depth Date/Time	DATE COMPLETED: 11/24/92
DRILLING METHODS: Cable Tool		PAGE 7	OF 13

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER MIN	RECOVERY MIN	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
	NA	6	0	No Recovery	NA	NA	HNU = NA R8 = NA
	NA	8	0	No Recovery	NA	NA	
19	NA	13	0	No Recovery	NA	NA	
19.25	1320 63125	5	6	V. STIFF, 2.5 (5/1) Gray Silty clay, widespread high plasticity, slightly moist	CI	2.0	HNU = 0 ppm R8 = 100 ppm
20	1320 63125	8	170	SAA, STIFF	CI	1.5	
20.5	1320 63125	NA	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Driller: Jim Sacconi
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: 1602 04.19		PROJECT NAME: 4 - RCRA Wall Program	
BORING NUMBER: 2821		COORDINATES:	DATE: 1/25/92
ELEVATION:		GWL: Depth Date/Time	DATE STARTED: 1/24/92
ENGINEER/GEOLOGIST: D. O'Brien		Depth Date/Time	DATE COMPLETED: 7/2/92
DRILLING METHODS: Cable Tool		PAGE 5	OF 15

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY IN	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
	1410 NA	7	0	No Recovery	NA	NA	HNU = 0 ppm BS = 160 cpm
	NA	8	0	No Recovery	NA	NA	
22	NA	10	0	No Recovery	NA	NA	
	1515 15127	4	6	Stiff, 2.5y (Bt) Gray silty clay w/ gravel, med plasticity slightly moist	CI	15	HNU = 0 ppm BS = 120 cpm
23	162592 NA	0	0	No Recovery	NA	NA	
	NA	0	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
 Driller: Jim Saccani
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

see p. 1

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: 1602.04.19	PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2721	COORDINATES:	DATE: 11/25/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 11/24/92
ENGINEER/GEOLOGIST: D.O'Brien	Depth Date/Time	DATE COMPLETED: 7/2/92
DRILLING METHODS: Cable Tool	PAGE 9	OF 15

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 IN	RECOVERY IN	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY TEST	REMARKS
	NA	4	○	No Recovery	NA	NA	HNU = NA BX = NA
	NA	4	○	No Recovery	NA	NA	
25	NA	4	○	No Recovery	NA	NA	
25.5	1535 BX125	3	2	STIFF 2.5y (sl.) Gray clay w/lanavel, med plasticity moist	cl	1.5	HNU = 0 dpm BX = 60 cpm
26	NA	7	○	No Recovery	NA	NA	
	NA	1	○	No Recovery	NA	NA	

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 42 Cyclone
 Driller: Jim Saccani
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: 602.04.19		PROJECT NAME: 4- RCRA Well Program	
BORING NUMBER: 2821		COORDINATES:	DATE: 11/25/92
ELEVATION:		GWL: Depth Date/Time	DATE STARTED: 11/24/92
ENGINEER/GEOLOGIST: D.O'Brien		Depth Date/Time	DATE COMPLETED: 7/6/92
DRILLING METHODS: Cable Tool		PAGE 10	OF 18

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0m	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
	NA	3	0	No Recovery	NA	NA	HNU = NA BX = NA
	NA	5	0	No Recovery	NA	NA	
28	NA	7	0	No Recovery	NA	NA	
	1320 1329	3	0	2.84 (Bl.) Gray clay w/ gravel mid part moist	CI	1.25	DO 8/4/92 HNU = NA oppm BX = NA 60cpm
29	1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1399 1400	16	0	No Recovery	DO 8/4/92 CI 1.5		
	NA	13	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
 Driller: Jim Saccani
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 1602 04.19	PROJECT NAME: 4 - RCRA Wall Program	
BORING NUMBER: 2321	COORDINATES:	DATE: 11/25/92
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 11/24/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth Date/Time	DATE COMPLETED: 11/24/92
DRILLING METHODS: Cable Tool		PAGE 11 OF 13

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 100mm	RECOVERY	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%SF)	REMARKS
14	1605	15	6	Hard 2.5y (5/1) Gray granular clay, low plasticity, slightly moist	CI	4.0	HNU = 0 ppm BX = 500 ppm
	1605	38	6	SAA	CI	4.5	
31	NA	50/4	0	No Recovery	NA	NA	
	1620	32	6	Hard 2.5y (5/1) Gray, sandy granular clay, low plasticity, moist	CI	14.5	HNU = 0 ppm BX = 1000 ppm
32	1620	47	6	SAA	CI	14.5	
	1620	47	1	SAA	C	14.5	

NOTES:

Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
 Driller: Jim Saccani
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: 602 04.19	PROJECT NAME: 4 - RCRA Well Program		
BORING NUMBER: 2821	COORDINATES:	DATE: 1/29/92	
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 1/24/92
ENGINEER/GEOLOGIST: D. O'Brien	Depth	Date/Time	DATE COMPLETED: 7/2/92
DRILLING METHODS: Cable Tool			PAGE 12 OF 15

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER FOOT	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY TSF	REMARKS
11.25	NA	8	0	No Recovery	NA	NA	HNU = NA BS = NA
16	NA	16	0	No Recovery	NA	NA	
21	NA	21	0	No Recovery	NA	NA	
25	1B03 US135	14	6	V. Stiff, 2.5Y (5/1) Gray granular clay no plasticity no st	CI	2.5	HNU = 0 ppm BS = 60 cpm
29	NA	13	0	SAA = 10YR (5/4) yellowish brown moist No Recovery	CI	2.5	
26	NA	26	0	No Recovery	NA	NA	

NOTES:

Drilling Contractor Pennsylvania Drilling
 Drilling Equipment 42 Cyclone
 Coder: Jim Saccani
CRAIG COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

see p 1

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: <u>102 C4.19</u>		PROJECT NAME: <u>4- RCRA Wall Program</u>	
BORING NUMBER: <u>2821</u>		COORDINATES:	DATE: <u>6/29/92</u>
ELEVATION:		GWL: Depth Date/Time	DATE STARTED: <u>6/24/92</u>
ENGINEER/GEOLOGIST: <u>D.O'Brien</u>		Depth Date/Time	DATE COMPLETED: <u>7/2/92</u>
DRILLING METHODS: <u>Cable Tool</u>		PAGE <u>13</u> OF <u>15</u>	

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER FOOT	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (%)	REMARKS
	<u>U30B1</u>	<u>37</u>	<u>6</u>	<u>V. Dense 2-10YR (5/4) yellowish brown fine sand, poorly graded, dry</u>	<u>SP</u>	<u>NA</u>	<u>HNU = 0ppm BS = 60cpm</u>
	<u>U30B2</u>	<u>65</u>	<u>5</u>	<u>SAA</u>	<u>SP</u>	<u>NA</u>	
<u>37</u>	<u>U30B2</u>			<u>See boring logs 3821 for soil descriptions from 37 ft to bottom of boring at 80 ft</u>			
<u>38</u>	<u>U30B2</u>						<u>HNU = NA BS = NA</u>
<u>39</u>							
<u>40</u>							
<u>41</u>							
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<u>99</u>							
<u>100</u>							

NOTES:

Drilling Contractor: Pennsylvania Drilling
 Drilling Equipment: 2 Cyclone
 Driller: M. Saccan
CRANE COULTER

SAA - SAME AS ABOVE
 NA - NOT APPLICABLE

See p. 1

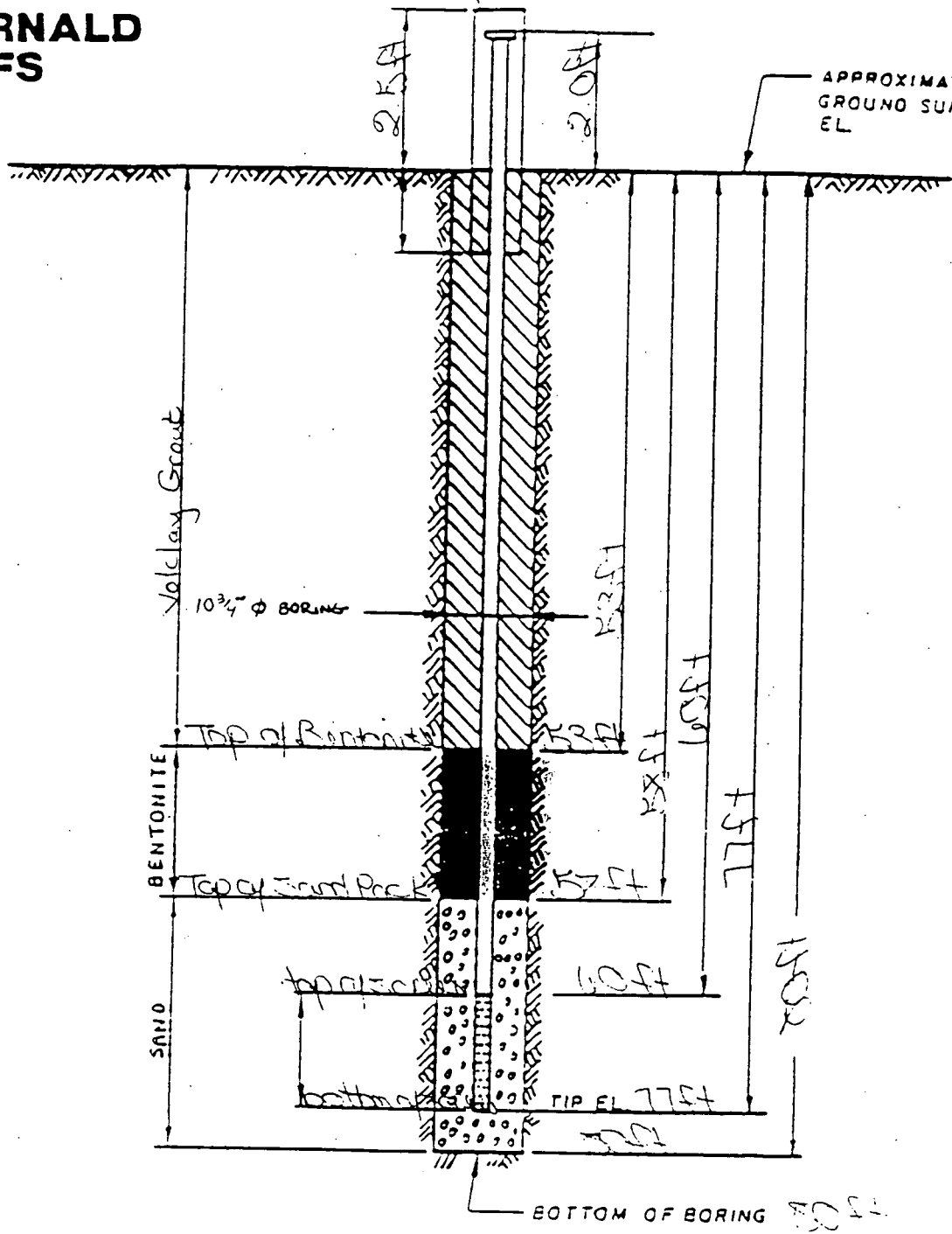
1521 11.2
1421 15

3656

FERNALD RI/FS

PROTECTIVE RISER CASING

APPROXIMATE EXISTING
GROUND SURFACE
EL



NOTES:

1. RISER PIPE IS IN 10. SCHEDULE PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 10.031 IN. PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE)
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 60.24
5. WATER LEVEL READING ON 7/2/92

INSTALLATION DETAILS
MONITORING WELL 2321

PREPARED FOR
Task 2321.01.19

1.031 IN. PIPE CONTINUOUS
SLOT SCREEN (0.010 IN. SLOT SIZE)
LOWER END OF SCREEN IS CAPPED
ELEVATION OF WATER LEVEL 60.24
WATER LEVEL READING ON 7/2/92

PIEZOMETER INSTALLATION SHEET

PROJECT NAME 4 RCRA Well FIELD ENG./GEO. D. J. Paine DATE 7/2/92
 PROJECT NO. 102 ON 19 CHECKED BY C. Bruen DATE 7/4/92
 BORING NO. 2821
 PIEZOMETER NO. 2821 DATE OF INSTALLATION 7/2/92

BOREHOLE DRILLING

DRILLING METHOD <u>Cable Tool</u>	TYPE OF BIT <u>Churn Bit</u>
DRILLING FLUID (S) USED:	CASING SIZE (S) USED:
FLUID <u>NA</u> FROM <u>0.0 ft</u> TO <u>30.0 ft</u>	SIZE <u>2.0 in</u> FROM <u>0.0 ft</u> TO <u>30.0 ft</u>
FLUID <u>NA</u> FROM <u> </u> TO <u> </u>	SIZE <u>NA</u> FROM <u> </u> TO <u> </u>

PIEZOMETER DESCRIPTION

TYPE <u>Monitoring Well</u>	RISER PIPE MATERIAL <u>316 Stainless Steel</u>
DIAMETER OF PERFORATED SECTION <u>4.0 in</u>	RISER PIPE DIAMETERS:
PERFORATION TYPE:	O.D. <u>4.375 in</u> I.D. <u>4.2 in</u>
SLOTS <input checked="" type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>1.25 ft section to 10 ft section</u>
AVERAGE SIZE OF PERFORATIONS <u>0.010 in</u>	JOINING METHOD <u>Flush joint threaded</u>
TOTAL PERFORATED AREA <u>15.0 ft</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5.0 ft</u>	OTHER PROTECTION <u>Hard locking cover</u>
PROTECTIVE PIPE O.D. <u>1.314 in</u>	<u>will install</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft)		ELEVATION ()	
TOP OF RISER PIPE	2.0			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	2.5			
BOREHOLE FILL MATERIALS:				
	GROUT/SLURRY	TOP 2.0 BOTTOM 13.0	TCP	BOTTOM
	BENTONITE	TOP 13.0 BOTTOM 15.0	TOP	BOTTOM
	SAND	TOP 15.0 BOTTOM 20.0	TOP	BOTTOM
	GRAVEL	TOP 20.0 BOTTOM 25.0	TOP	BOTTOM
PERFORATED SECTION	TOP 15.0	BOTTOM 25.0	TOP	BOTTOM
PIEZOMETER TIP	25.0			
BOTTOM OF BOREHOLE	30.0			
GWL AFTER INSTALLATION	10.0			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☐
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☐

REMARKS There is a 2 ft slump at the end of the 15 ft screen.

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602-5003.07</u>	PROJECT NAME: <u>FEMP RI/FS</u>	
BORING NUMBER: <u>1838</u>	COORDINATES:	DATE: <u>7-8-92</u>
ELEVATION:	GWL: Depth <u>10.82 ft</u> Date/Time <u>7-14-92 / 0815</u>	DATE STARTED: <u>7-8-92</u>
ENGINEER/GEOLOGIST: <u>K. Marion</u>	Depth Date/Time	DATE COMPLETED: <u>7-13-92</u>
DRILLING METHODS: <u>8" Hollow Stem Augers</u>		PAGE <u>1</u> OF <u>5</u>

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0.0	098401 1510 7-8-92	9	6	Very stiff yellowish brown (10YR, 5/1) sandy, silty clay fill, trace gravel, asphalt, and concrete, moist	CL	4.5	H _{nu} = 0 ppm B _x = 150 cpm α = 0 cpm
	098402 1510 7-8-92	19	6	Very stiff K.M. 7-13-92 S.A.A.	CL	4.5	
	098403 1510 7-8-92	30	3	S.A.A.	CL	4.5	
1.5	098404 1525 7-8-92	18	6	Very stiff dark yellowish brown (10YR, 4/4) sandy clay fill, trace gravel, moist	CL	4.0	H _{nu} = 0 ppm B _x = 100 cpm α = 0 cpm
	098405 1525 7-8-92	15	2	S.A.A.	CL	4.0	
2.5	098406 1530 7-8-92	18	6	Very stiff dark brown (10YR, 3/3) to dark yellowish brown (10YR, 4/4) sandy clay fill w/ trace gravel & limestone fragments, iron oxide stains, moist	CL	4.0	H _{nu} = 0 ppm B _x = 100 cpm α = 0 cpm
	098407 1530 7-8-92	33	6	S.A.A.	CL	4.0	
	098408 1530 7-8-92	52	6	S.A.A.	CL	4.0	A 3" split spoon was driven to collect Full HSL and RAD samples
4.0	098409 1543 7-8-92	18	6	Medium stiff mixed light olive brown (2.5Y, 5/3) & yellowish brown (10YR, 5/6) sandy clay fill w/ limestone frags, gravel, & brick frags, moist	CL	2.0	H _{nu} = 0 ppm B _x = 100 cpm α = 0 cpm
	098410 1543 7-8-92	9	6	Med. stiff brown (10YR, 5/3) sandy, silty clay fill w/ trace gravel & brick fragments, moist	CL	2.0	
5.0	098411 1050 7-8-92	22	6	Hard light olive brown (2.5Y, 5/4) silty clay with sand and coarse gravel, slightly moist, non plastic	CL	>4.5	H _{nu} = 0 ppm B _x = 100 cpm α = 0 cpm
	098411 1050 7-8-92	23	6	Same As Above	CL	>4.5	
	098411 1050 7-8-92	40	6	Same As Above	CL	>4.5	A 3" split spoon was driven to collect Full HSL and RAD samples
6.5	098413 1710 7-8-92	13	6	Hard light olive brown (2.5Y, 5/4) silty clay with a little sand and gravel and yellowish brown (10YR, 5/6) mottling, medium plasticity, slightly moist	CL	>4.5	H _{nu} = 0 ppm B _x = 100 cpm α = 0 cpm
	098414 1710 7-8-92	20	6	Same As Above	CL	>4.5	This split spoon is continued on the next page

NOTES:

Drilling Contractor Pennsylvania Drilling
 Drilling Equipment Mobile 80 Auger Rig
 Driller: Dave Newman
Bob Johnson

S.A.A. = Same As Above

Samples Collected per ASTM Standard Penetration Test Colors Identified using Munsell color chart

Background Levels: H_{nu} = 0 ppm
 B_x = 100 cpm
 α = 0 cpm

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.50.03.07	PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 1838	COORDINATES:	DATE: 7-9-92
ELEVATION:	GWL: Depth 10.82 ft Date/Time 7-14-92/6616	DATE STARTED: 7-8-92
ENGINEER/GEOLOGIST: K. Marian	Depth	DATE COMPLETED: 7-13-92
DRILLING METHODS: 8" Hollow Stem Auger	PAGE 2 OF 5	

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 16 IN	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.5	098415 1410 7-9-92	21	4	Hard light olive brown (2.5Y, 5/4) silty clay with a little sand and gravel and yellowish brown (10YR, 5/6) mottling, medium plasticity, slightly moist	CL	>4.5	H _{nu} = 0 ppm B _r = 100 cpm α = 0 cpm
8.0	098416 1430 7-9-92	18	6	Hard gray (5Y, 5/1) clay with sand and very fine gravel, medium plasticity, slightly moist	CL	4.5	H _{nu} = 0 ppm B _r = 100 cpm α = 0 cpm
	098417 1430 7-9-92	21	6	Same As Above	CL	4.5	
9.5	098418 1430 7-9-92	19	3	Very stiff gray (5Y, 5/1) clay with sand and very fine gravel, medium plasticity, slightly moist	CL	3.0	
	098419 1445 7-9-92	5	6	Very stiff gray (5Y, 5/1) clay with trace sand and fine gravel, medium plasticity, moist	CL	2.5	H _{nu} = 0 ppm B _r = 100 cpm α = 0 cpm
	098420 1445 7-9-92	5	6	Same As Above	CL	2.5	
11.0	098421 1445 7-9-92	8	1	Same As Above	CL	2.5	Water level = 10.82 ft.
	098422 1600 7-9-92	9	6	Very stiff gray (5Y, 5/1) silty clay with sand and gravel, high plasticity, moist	CL	2.25	H _{nu} = 0 ppm B _r = 100 cpm α = 0 cpm
	098423 1600 7-9-92	13	6	Same As Above	CL	2.25	
	098424 1600 7-9-92	18	6	Same As Above	CL	2.25	
12.5	098425 1612 7-9-92	18	6	Stiff gray (5Y, 5/1) silty clay with sand and gravel, high plasticity, moist	CL	1.5	H _{nu} = 0 ppm B _r = 100 cpm α = 0 cpm
	098426 1612 7-9-92	19	6	Same As Above	CL	1.5	
	098427 1612 7-9-92	23	6	Same As Above	CL	1.5	
14.0	098428 1630 7-9-92	19	6	Same As Above	CL	2.0	H _{nu} = 0 ppm B _r = 100 cpm α = 0 cpm
15.0	098429 1630 7-9-92	19	6	Same As Above	CL	2.0	

NOTES:

Drilling Contractor _____

Drilling Equipment _____

Driller: _____

SEE PAGE 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.50.03.07	PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 1838	COORDINATES:	DATE: 7-9-92
ELEVATION:	GWL: Depth 10.82 ft. Date/Time 7-4-92 / 6815	DATE STARTED: 7-8-92
ENGINEER/GEOLOGIST: K. Marion	Depth Date/Time	DATE COMPLETED: 7-13-92
DRILLING METHODS: 8" Hollow Stem Auger		PAGE 3 OF 5

DEPTH (ft.)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (6" n.)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
15.0	098430 1630 7-9-92	21	6	Very stiff gray (54, 5/1) silty clay with sand and gravel, high plasticity, moist	CL	225	H _{nu} = 0 ppm B _r = 100 cpm α = 0 cpm
15.5	098431 1640 7-9-92	3	6	Same As Above	CL	2.0	H _{nu} = 0 ppm B _r = 100 cpm α = 0 cpm
	098432 1640 7-9-92	6	6	Same As Above	CL	2.0	
	098433 1640 7-9-92	10	6	Same As Above	CL	2.25	
17.0	098434 1655 7-9-92	13	6	Stiff gray (54, 5/1) silty clay with sand and gravel, high plasticity, moist	CL	1.5	H _{nu} = 0 ppm B _r = 100 cpm α = 0 cpm
	098435 1655 7-9-92	18	6	Same As Above	CL	1.5	
	098436 1655 7-9-92	20	6	Same As Above	CL	1.5	
18.5	098437 1700 7-9-92	23	6	Hard gray (54, 5/1) silty clay with sand and gravel, low plasticity, slightly moist	CL	>45	H _{nu} = 0 ppm B _r = 100 cpm α = 0 cpm
	098438 1700 7-9-92	33	6	Very dense gray (54, 5/1) clayey silt with sand and gravel, slightly moist	ML	N/A	
	098439 1700 7-9-92	35	6	Same As Above	ML	N/A	
20.0				Bottom of Bore Hole - 20 ft.			

NOTES

Drilling Contractor _____

Drilling Equipment _____

Driller: _____

SEE Page 1

FERNALD RI/FS

INSTALLATION DIAGRAM
MONITORING WELL NO.

1838

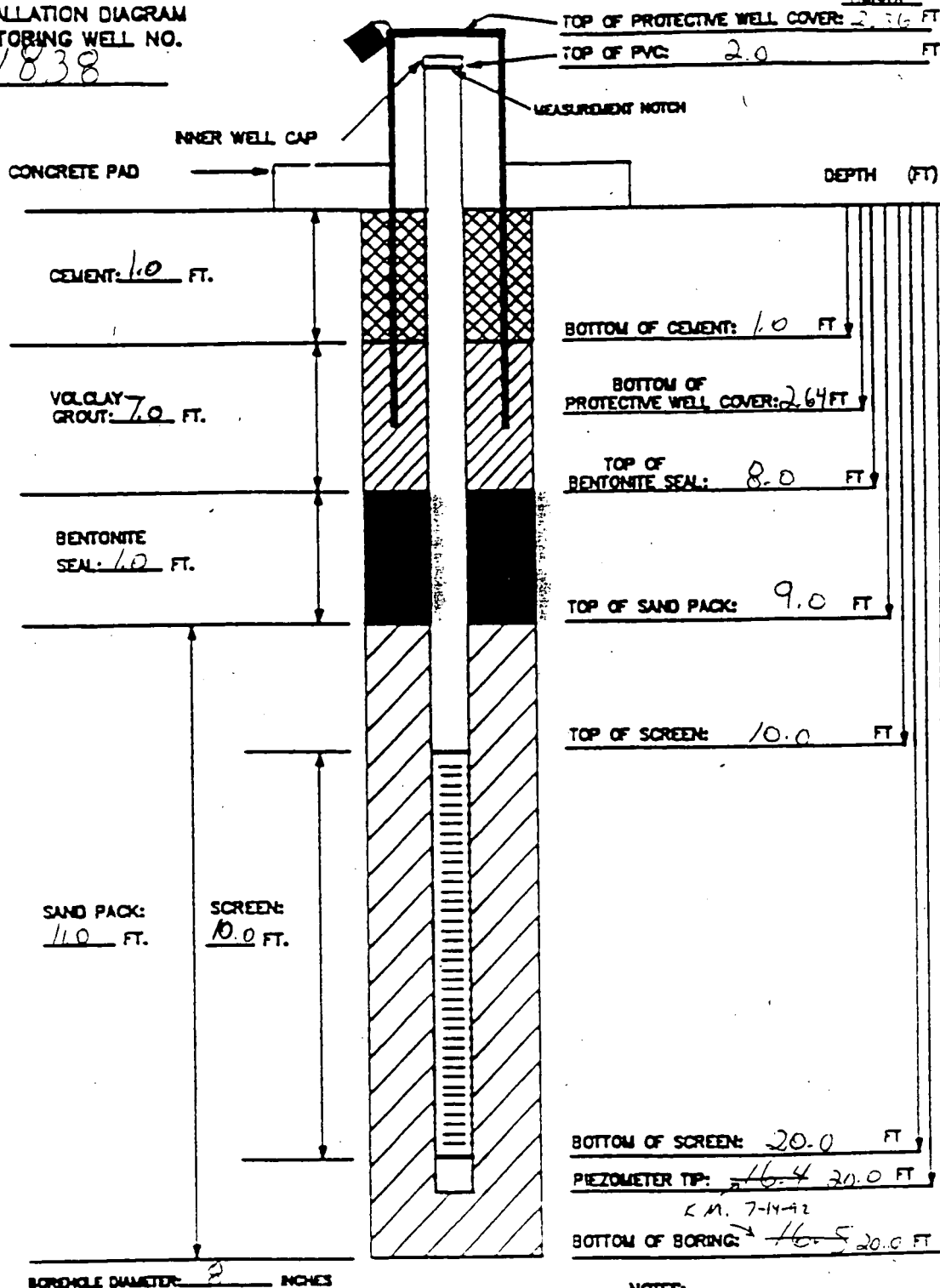
Stick ups

INSTALLATION DATE: 7-14-92

7-13-92

HEIGHT

3656



MATERIALS USED:

SAND TYPE AND QUANTITY: 3 1/2 80 lb. bags of 10/20 Sand

BENTONITE PELLETS (5-GALLON BUCKETS): 1

BAGS OF VOLCLAY GROUT: 1 1/2 50 lb. bags

AMOUNT OF CEMENT: 1/2 50 lb. bag of portland cement

AMOUNT OF WATER USED: 40 gallons

OTHER: 2 soil samplers, 1 ocean water drum, 1 hole hole water drum generator

PVC pipe sections: 1-10 ft screen, 1-10 ft riser, 1-2 ft riser

TASK: 602.50 03.01

NOTES:

- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
- 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
- 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED PLUG.
- 4) WATER DEPTH/DATE: 10.82 ft / 7-14-92

GEOLOGIST/ENGINEER: K. Martin

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FEMP RI /FS FIELD ENG./GEO. Ken Marion DATE 7-14-92
PROJECT NO. 602. 50.03.07 CHECKED BY C. Baker DATE 8/4/92
BORING NO. 1838
PIEZOMETER NO. 1838 DATE OF INSTALLATION 7-13-92

BOREHOLE DRILLING

DRILLING METHOD <u>8" Hollow Stem Auger</u>	TYPE OF BIT <u>Bull Dog</u>
DRILLING FLUID (S) USED: FLUID <u>N/A</u> FROM <u>N/A</u> TO <u>N/A</u> FLUID <u>N/A</u> FROM <u>N/A</u> TO <u>N/A</u>	CASING SIZE (S) USED: SIZE <u>N/A</u> FROM <u>N/A</u> TC <u>N/A</u> SIZE <u>N/A</u> FROM <u>N/A</u> TC <u>N/A</u>

PIEZOMETER DESCRIPTION

TYPE <u>Monitoring Piezometer</u>	RISER PIPE MATERIAL <u>Schedule 40 PVC</u>
DIAMETER OF PERFORATED SECTION <u>2.0 in. I.D.</u>	RISER PIPE DIAMETERS: O.D. <u>2 5/16 in.</u> I.D. <u>2.0 in.</u>
PERFORATION TYPE: SLOTS <input checked="" type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>10 ft., 1-10 ft screen, 1-2 ft.</u>
AVERAGE SIZE OF PERFORATIONS <u>0.020 in.</u>	JOINING METHOD <u>screw type - flush joint</u>
TOTAL PERFORATED AREA <u>10.0 ft.</u>	<u>threaded</u>

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5.0 ft.</u>	OTHER PROTECTION <u>Hinged cover with</u>
PROTECTIVE PIPE O.D. <u>4 3/8 in.</u>	<u>lock</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft)		ELEVATION (ft)	
TOP OF RISER PIPE	2.36			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	2.64			
BOREHOLE FILL MATERIALS: <u>CEMENT</u> <u>GROUT/SLURRY</u> K.M. 7-14-92 <u>BENTONITE</u> <u>SAND 10/20</u> <u>GRAVEL</u>	TOP 0.0	BOTTOM 1.0		
	TOP 1.0	BOTTOM 8.0	TCP	BOTTOM
	TOP 8.0	BOTTOM 20.0	TOP	BOTTOM
	TOP 9.0	BOTTOM 20.0	TOP	BOTTOM
	TOP N/A	BOTTOM N/A	TOP	BOTTOM
PERFORATED SECTION	TOP 10.0	BOTTOM 20.0	TOP	BOTTOM
PIEZOMETER TIP	20.0			
BOTTOM OF BOREHOLE	20.0			
BWL AFTER INSTALLATION	10.82			

THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒
A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602.50.03.07</u>		PROJECT NAME: <u>FEMP RI/FS</u>	
BORING NUMBER: <u>1936</u>		COORDINATES:	
ELEVATION:		GWL: Depth <u>8.13 ft</u> Date/Time <u>7-9-92/1000</u>	DATE: <u>7-2-92</u>
ENGINEER/GEOLOGIST: <u>K. Marion</u>		Depth	DATE STARTED: <u>7-2-92</u>
DRILLING METHODS: <u>8" Hollow Stem Auger</u>		Date/Time	DATE COMPLETED: <u>7-6-92 7-7-92</u>
		PAGE <u>1</u>	OF <u>3</u>

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (6" a.)	RECOVERY %	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	NA Wet Construction	REMARKS
K.M. 7-2-92								
2.0	098366 1455 7-2-92	8	6	Dense CLAYEY SILT light olive brown (2.5Y, 5/4) clayey silt with sand and gravel, trace fossils, dry	ML	N/A		H _{nu} = 1.0 ppm B _r = 40 cpm α = 0 cpm
	098367 1455 7-2-92	18	6	Same As Above	ML	N/A		
	098368 1455 7-2-92	23	6	Same As Above	ML	N/A		
1.5	098369 1515 7-2-92	23	6	Same As Above	ML	N/A		
	098370 1515 7-2-92	20	4	Hard yellowish brown (10YR, 5/2) silty CLAY, low plasticity, slightly moist	CL	74.5		H _{nu} = 1.0 ppm B _r = 40 cpm α = 0 cpm
	NA	18	0	No Recovery	MA	N/A		
3.0	098372 0940 7-6-92	8	6	Very stiff yellowish brown (10YR, 5/6) silty clay, low plasticity, moist	CL	3.75		H _{nu} = 0.2 ppm B _r = 50 cpm α = 0 cpm
	098371 0940 7-6-92	18	6	Same As Above	CL	3.75		
	098373 0940 7-6-92	27	6	Same As Above	CL	3.75		A 3" split spoon was driven to collect Full H _{SL} and RAO samples
4.5	098374 1040 7-6-92	5	6	Medium dense light olive brown (2.5Y, 5/6) clayey silt with trace sand and very fine gravel, moist	ML	N/A		H _{nu} = 0.2 ppm B _r = 50 cpm α = 0 cpm
	098375 1040 7-6-92	8	6	Same As Above	ML	N/A		
	NA	9	0	No Recovery	N/A	N/A		
6.0	098376 1367 7-6-92	10	6	Medium dense light olive brown (2.5Y, 5/4) clayey silt, slightly moist	ML	N/A		H _{nu} = 0.2 ppm B _r = 50 cpm α = 0 cpm
SWAY ZONE USFS	098376 1367 7-6-92	10	6	Medium dense light olive brown (2.5Y, 5/4) very graded very fine sand, wet	SP	N/A		
	098377 1367 7-6-92	11	6	Medium dense light olive brown (2.5Y, 5/4) clayey silt, moist	ML	N/A		A 3" split spoon was driven to collect Full H _{SL} and RAO samples

NOTES:

Drilling Contractor Pennsylvania Drilling

Drilling Equipment Mobile B0 Auger Rig

Driller: Dave Newman
Bob Johnson

Samples collected per ASTM standard Penetration Test
Colors Identified using Munsell Color Chart

Background Levels: H_{nu} = 1.0 ppm
B_r = 40 cpm
α = 0 cpm

VISUAL CLASSIFICATION OF SOILS

3656

PROJECT NUMBER: <u>602-SO.03.07</u>	PROJECT NAME: <u>FEMP RI/FS</u>	
BORING NUMBER: <u>1836</u>	COORDINATES:	DATE: <u>7-6-92</u>
ELEVATION:	GWL: Depth <u>8.13 ft</u> Date/Time <u>7-6-92/1000</u>	DATE STARTED: <u>7-2-92</u>
ENGINEER/GEOLOGIST: <u>K. Marjon</u>	Depth	DATE COMPLETED: <u>7-6-92</u>
DRILLING METHODS: <u>8" Hollow Stem Auger</u>		PAGE: <u>2</u> OF <u>3</u>

DEPTH (ft.)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (6 in.)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WATER CONTENT (%)	REMARKS
7.5	098318 1355 7-6-92	3	6	Medium dense light olive brown (2.5, 5/4) clayey silt, moist with intermittent lenses of very fine sand, wet	ML/SC	N/A		H _{nu} = 0.2 ppm B _γ = 50 cpm α = 0 cpm
	098319 1355 7-6-92	5	6	Same As Above	ML/SC	N/A		Water Level = 8.13 ft. Below Ground surface
	098320 1355 7-6-92	6	6	Same As Above	ML/SC	N/A		
9.0	098321 1415 7-6-92	7	6	Same As Above	ML/SC	N/A		H _{nu} = 0.2 ppm B _γ = 50 cpm α = 0 cpm
	098322 1415 7-6-92	7	6	Same As Above	ML/SC	N/A		
	098323 1415 7-6-92	10	6	Same As Above	ML/SC	N/A		
10.5	098324 1430 7-6-92	6	6	Medium dense light olive brown (2.5, 5/4) poorly graded fine sand, wet	SP	N/A		H _{nu} = 0.2 ppm B _γ = 50 cpm α = 0 cpm
	098325 1430 7-6-92	12	4	Same As Above	SP	N/A		
	NA	15	0	No Recovery	N/A	N/A		
12.0	098326 1445 7-6-92	13	6	Medium dense light olive brown (2.5, 5/6) poorly graded fine sand, wet	SP	N/A		H _{nu} = 0.2 ppm B _γ = 50 cpm α = 0 cpm
	098327 1445 7-6-92	17	6	Same As Above	SP	N/A		
	098328 1445 7-6-92	13	2	Same As Above	SP	N/A		
13.5	098329 1458 7-6-92	5	6	Dense light olive brown (2.5, 5/4) poorly graded fine sand, moist	SP	N/A		H _{nu} = 0.2 ppm B _γ = 50 cpm α = 0 cpm
	098330 1458 7-6-92	7	6	Same As Above	SP	N/A		
from of water 15.0	098331 1458 7-6-92	25	2	Same As Above	SP	N/A		

NOTES:

Drilling Contractor _____

Drilling Equipment _____

Driller: _____

7-6-92

Background Levels: H_{nu} = 0.2 ppm
B_γ = 50 cpm
α = 0 cpm

SEE PAGE 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602-50-03.07	PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 1836	COORDINATES:	DATE: 7-6-92
ELEVATION:	GWL: Depth 9.13 ft. Date/Time 7-9-92 / 1000	DATE STARTED: 7-2-92
ENGINEER/GEOLOGIST: K. Marian	Depth	DATE COMPLETED: 7-7-92
DRILLING METHODS: 8" Hollow Stem Augers		PAGE 3 OF 5

DEPTH (ft.)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (6 in.)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	NA well construction	REMARKS
15.0	98392 1512 7-6-92	1	6	Medium dense gray (SY, S/I) poorly graded very fine sand, moist	SP	N/A		15.16 ft.
	98393 1512 7-6-92	3	6	Very stiff gray (SY, S/I) silty clay with trace sand and gravel, medium plasticity, slightly moist	CL	2.75		H _{nu} = 0.2 cpm B _u = 50 cpm L = 0 cpm
16.5	98394 1512 7-6-92	8	0	No Recovery	N/A	N/A		
				Bottom of Bore Hole - 16.5 ft				
				Bottom of Sampling - 16.5 ft				

NOTES.

Drilling Contractor _____

Drilling Equipment _____

Driller: _____

SEE PAGE 1

K.A. 7-7-92

INSTALLATION DATE: 7-7-92

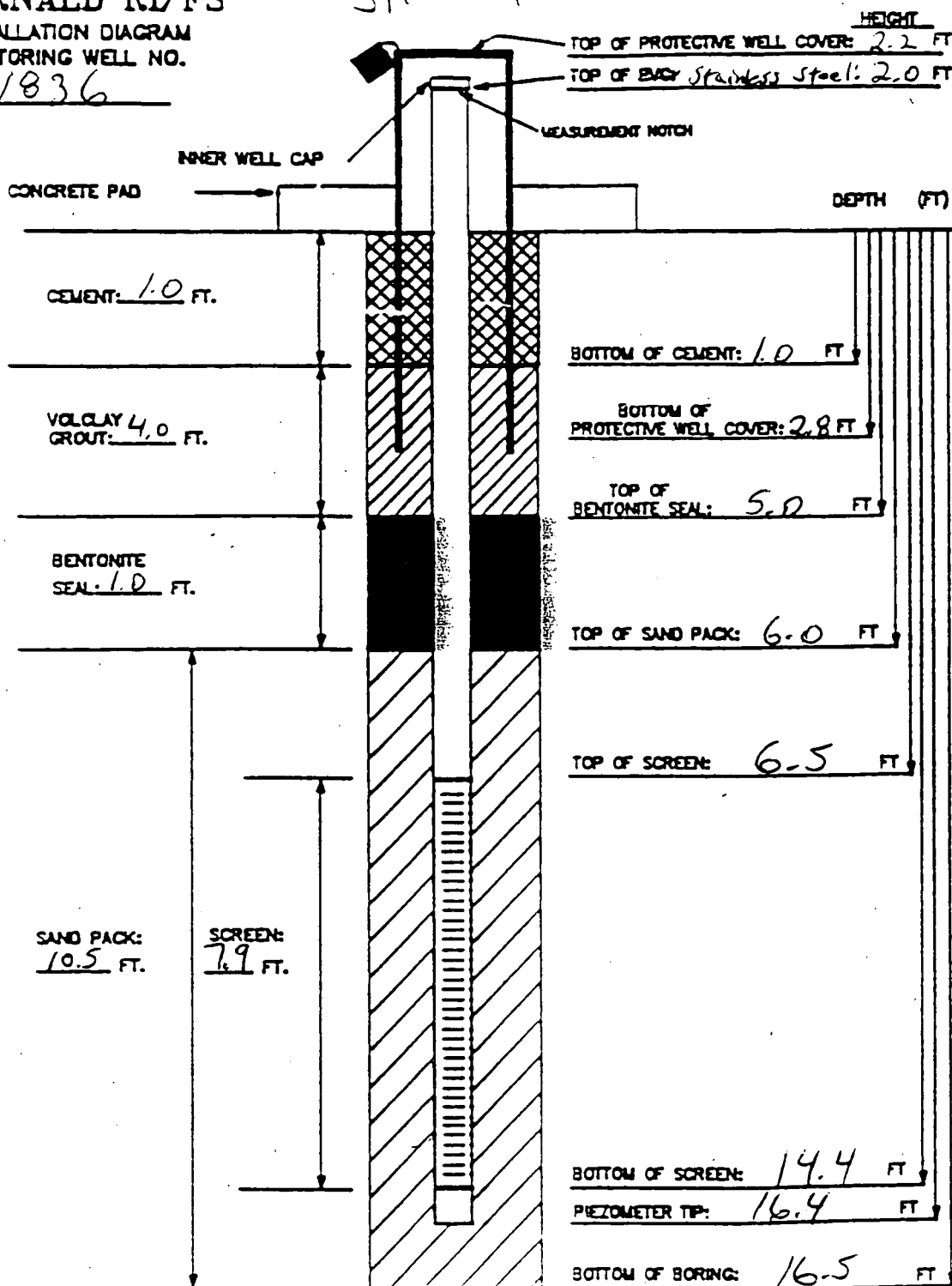
3856

FERNALD RI/FS

INSTALLATION DIAGRAM
MONITORING WELL NO.

1836

Stickups



WATERLAYS USED:

SAND TYPE AND QUANTITY: 2 cu lb. bags of 10/20 SAND
BENTONITE PELLETS (5-GALLON BUCKETS): 1/2
BAGS OF VOLCLAY GROUT: 1.50 lb. bag
AMOUNT OF CEMENT: 1/2 50 lb. bag of portland cement
AMOUNT OF WATER USED: 78 Gallons
OTHER: 2 Soil Drums & 1 Ocean Water drum
316 stainless steel pipe sections: 1-2 ft. screen, 1-5 ft. screen,
1-2 ft. pump, 1-9.5 ft. riser TASK: 602.50.0307

NOTES:

- 1) RISER PIPE IS 4-INCH SCHEDULE 40 316 STAINLESS STEEL
- 2) SCREEN IS 4-INCH I.D. SCHEDULE 40 316 STAINLESS STEEL
- 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SLUMP.
- 4) WATER DEPTH/DATE: 8.13 ft. / 7-9-92

GEOLOGIST/ENGINEER: K. Marion